ASHTON

LOCOMOTIVE

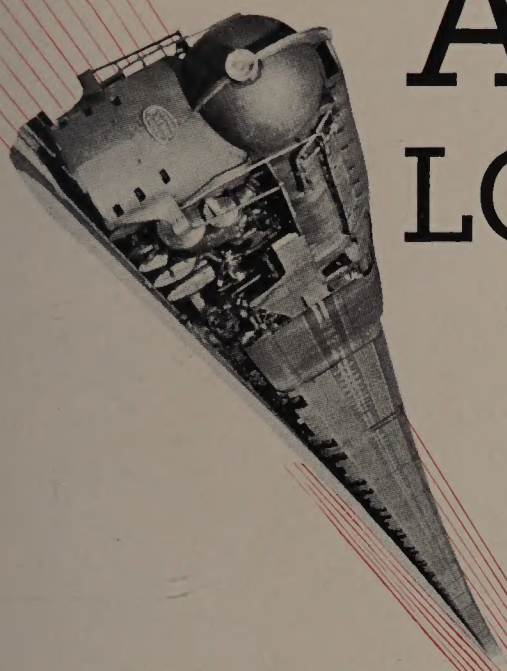
GAGES

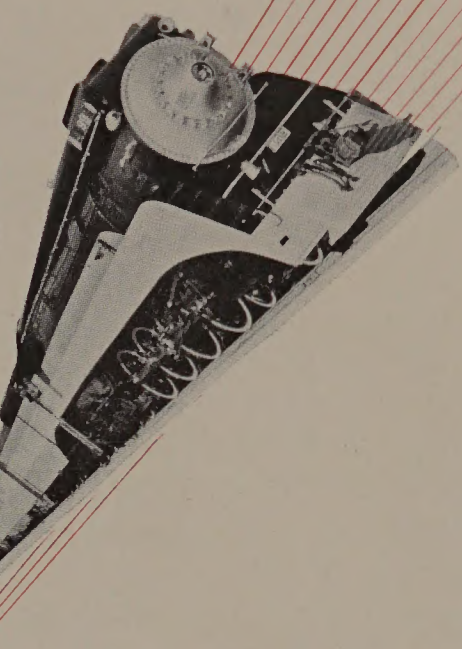
THE ASHTON VALVE COMPANY

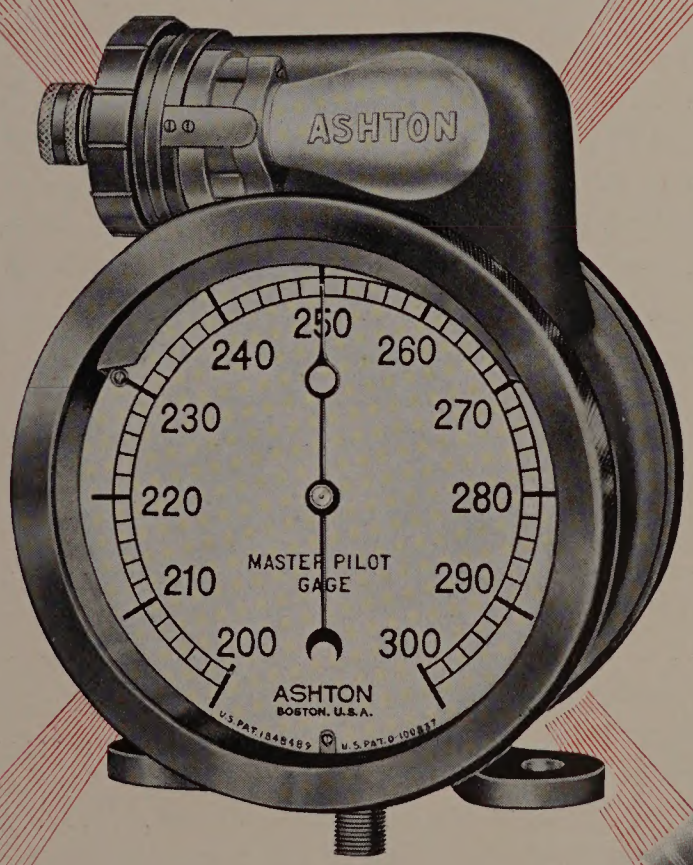
CAMBRIDGE · BOSTON · MASSACHUSETTS

ASHTON LOCOMOTIVE GAGES

FOR MODERN POWER







CATALOG
40 R.R.

THE ASHTON VALVE COMPANY

161-179 FIRST STREET
CAMBRIDGE (BOSTON) MASSACHUSETTS

NEW YORK SAN FRANCISCO CHICAGO

1941

ASHTON

INDEX

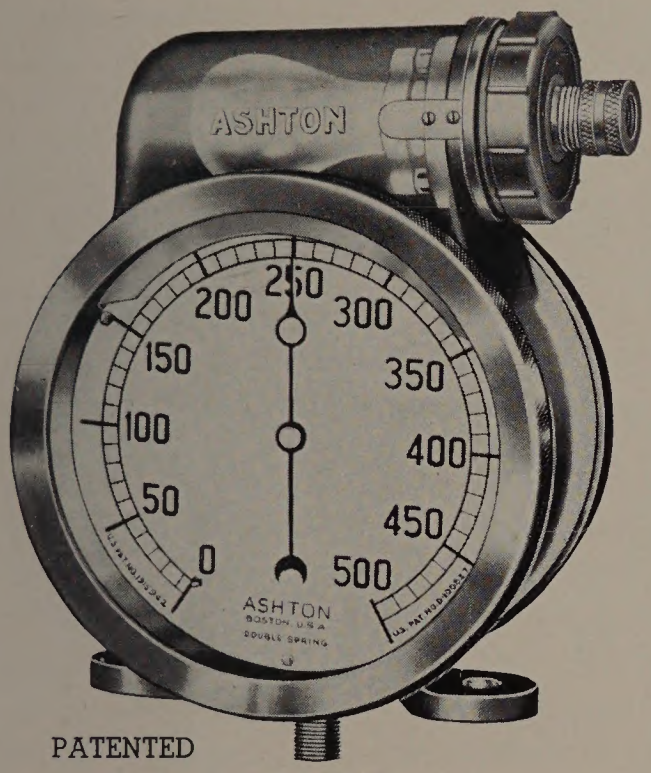
STYLE NUMBERS AND NAMES

161-179 FIRST STREET **THE ASHTON VALVE COMPANY** CAMBRIDGE (BOSTON), MASS.

ASHTON

New Style Dust-Proof Illuminated Dial

LOCOMOTIVE GAGES



PATENTED

52 DI-3

6¾″ Double Dial Locomotive Steam Gage

Flush Rings, Threaded Case
with Dust-Proof Felt Gaskets

LAMP HOUSING CAST INTEGRAL WITH CASE

Furnished with Flat White Porcelain "Non-Glare" Enameled Dials

For Standard Graduations, 300, 400, 500 and 600 pounds

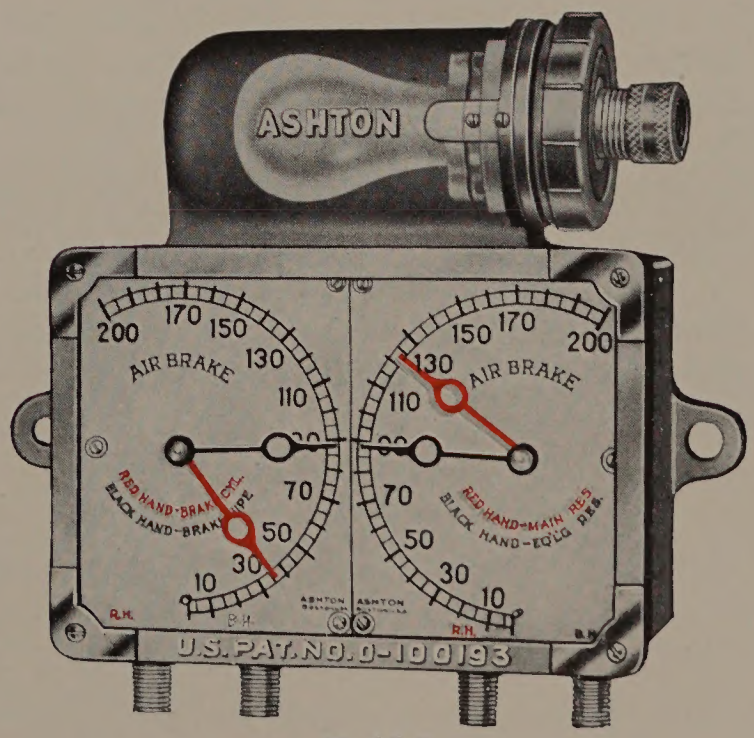
ASHTON QUALITY

5″ Improved Dust-Proof Quadruplex Air-Brake Gage

LAMP HOUSING CAST INTEGRAL WITH FACE RING

Furnished with Flat White Porcelain Enameled Dials

For Standard Service Marking and Graduations as Illustrated

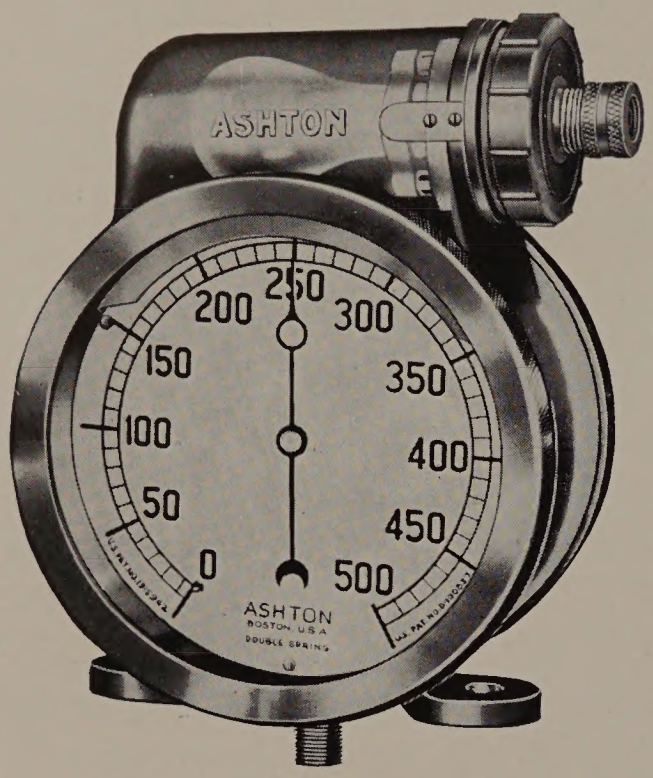


62 QI-7

ASHTON

6¾" Double Dial Locomotive Steam Gage

NEW STYLE DUST-PROOF ILLUMINATED



52 DI-3
With Electric Light Attachment
PATENTED

The New Style No. 52 DI-3 supersedes the well-known and extensively used Ashton DI Gage. While retaining all the advantages of the interior construction of the latter, the electric illuminating housing is now cast integral with the case, thus insuring a more completely dust-proof assembly, preventing dust, smoke, or grease getting into the interior, fouling the movement parts and obscuring the illumination of the dials. The use of this Gage eliminates the need of separate boiler pressure gages for engineer and fireman on large locomotives and those having fire boxes extending back into the cabs.

Each face of the Gage has a dial and hand. The two hands are at opposite ends of the extended pinion shaft, which, actuated by one movement and one set of Bourdon tubes, insures uniformity of pressure indications on both dials. One hand rotates clockwise and the other counterclockwise, as indicated in the illustrations, which show opposite faces. This simplified construction avoids the necessity of two movements, or extra reverse linkage. The wear of either or both will result in reports or complaints of different pressure indications on the two dials.

The dials of the 52 DI-3 are illuminated by a standard electric lamp bulb, having the American Railway Master Mechanics' bakelite receptacle with lamp grip. The light is reflected down on the dials on the inside of housing between dials and glasses, and thus does not interfere with the vision of the enginemen.

After extensive research we have developed a flat white porcelain enameled dial which is positively "non-glare" and eliminates reflection of light or shadows. These dials can be cleaned with soap and water and have a permanency not found in aluminum, processed or silvered dials, or any other type of dial. In ordering, specify style number of Gage, iron or brass case, and maximum pressure to which dials should be graduated; also finish of dials — porcelain, silvered or black.

Dials graduated to 300, 400, 500, 600 pounds are standard. We recommend Gage graduated to approximately twice working pressure. The double spring construction minimizes vibration and permits the tubes to be drained to prevent freezing.

Wiring inlet has one-half inch pipe thread for standard strain relief bushing, or flexible-metallic cable.

This Gage is made in the six and three-quarter inch dial size only, in dust-proof iron or brass case, with threaded knurled brass rings, one-quarter inch male pipe connection, **only one required.**

Gages should be so located as to avoid excessive heat. If near or immediately above a fire door a deflector should be provided.

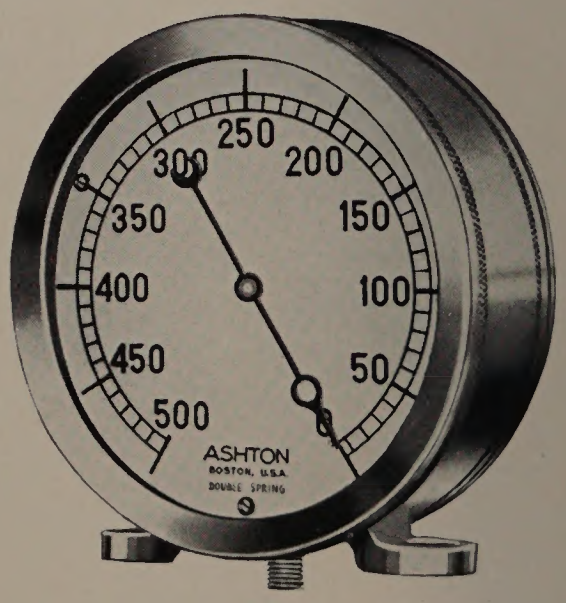
Siphons filled with water must be used with all steam Gages.

Gage without lighting attachment is called No. 52 D style. See cut.

Gages furnished without cocks or fittings.

No. 52 DI-3	Size, 6¾"	7¾" x 4 1/16" x 10⅛"	13½ lbs.
No. 52 D	Size, 6¾"	7¾" x 3" x 8"	9 lbs.

Other Dimensions and Part Lists on page 17.

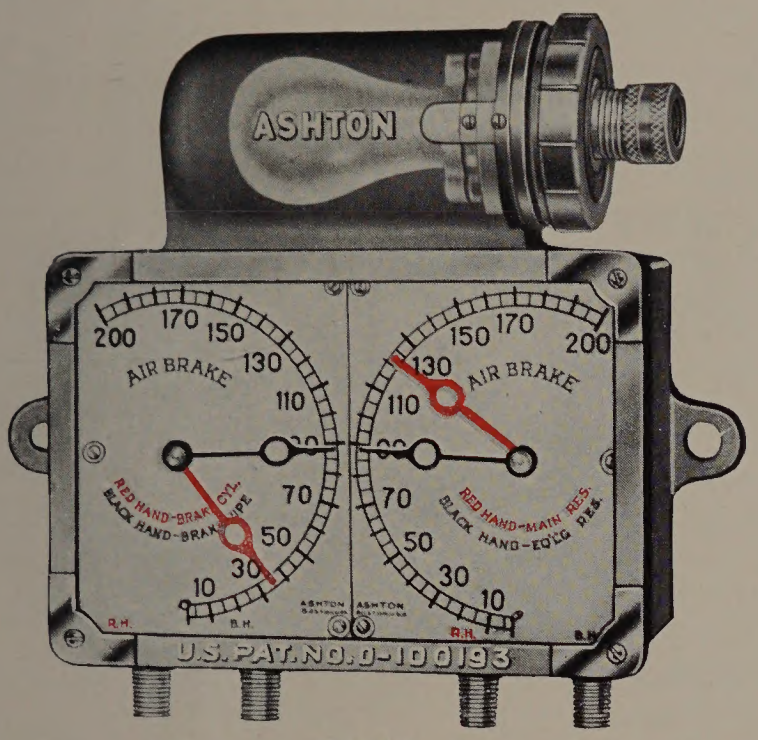


52 D
Without Electric Light Attachment

PRICES ON APPLICATION

5″ Dial Quadruplex Air-Brake Gage

NEW STYLE DUST-PROOF ILLUMINATED

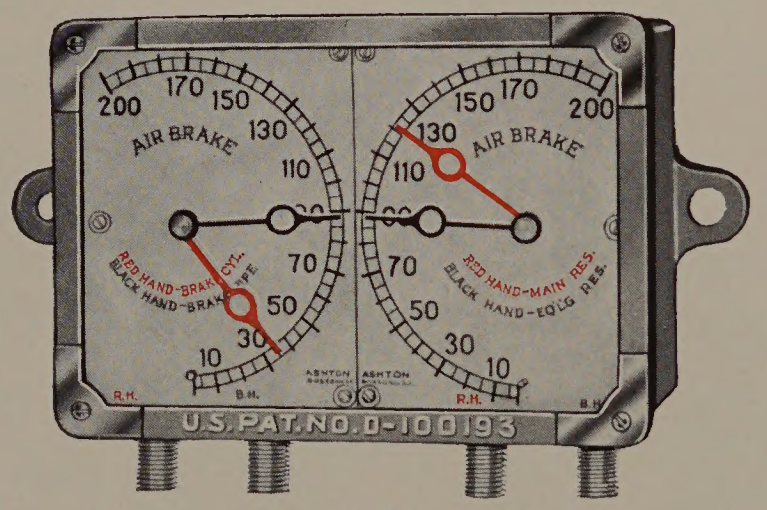


62 QI-7
With Electric Light Attachment

PERFECT VISIBILITY — OVER 7,000 IN SERVICE

The design of this Gage has been improved as illustrated, from which it will be noted that it is now made dust-proof, with lamp housing cast integral with the face ring, and the zero position on each dial is at the base of the vertical center line, thus obviating the hands traveling uphill to stop pin, and the possibility of a weakened hair spring allowing hands to recede from zero position. The dials are flat white porcelain, which gives better visibility from all angles.

This Ashton innovation in gage construction combines two duplex air Gages in one case (3½″ and 5″ sizes ordinarily used), thus producing uniformity in size of dials, one less gage case and economizing space in the locomotive cab.



62 Q-3
Without Electric Light Attachment

The principal object of this new design is to place in a centralized position the two air Gages and the indicating hands of same as near together as possible, so that the engineer by concentrating his vision particularly on the brake pipe and equalizing reservoir hands may regulate more uniformly and accurately his brake applications and secure smooth handling of the train.

The illumination of the dials is accomplished by the special enclosed electric light attachment, which prevents diffusion of the light rays over other sections of the cab and thus in no way interferes with the vision of the enginemen. The electric attachment for No. 62 QI-7 Gages is designed for a standard cab lamp, S-17 bulb, 15 watts, 34 volts, having bakelite receptacle with lamp grip, as adopted by A. R. Association Mechanical Section, 1920.

The gage cases being oblong will induce the mechanic to install same straight and will establish a uniformity in location of zero marks, a condition that will remain impossible as long as round case gages are used and installed to fit pipes or bracket holes originally placed to accommodate a gage of different make or diameter.

The movements and interior construction of the Gages are similar to those used in the Ashton No. 62-B Duplex Air-Brake Gages; therefore involve no complications in repairs or experiments. The Quadruplex Air Gages are so constructed that one Gage may be tested, adjusted or repaired without interfering with the other.

No. 62 QI-7 Brass	Size Case, 8⅞″ x 10¼″ x 4 5/16″	15¼ lbs.
No. 62 Q-3 Brass	Size Case, 8⅞″ x 5⅞″ x 3⅜″	11¼ lbs.
No. 62 Q-3 Aluminum	Size Case, 8⅞″ x 5⅞″ x 3⅜″	6½ lbs.

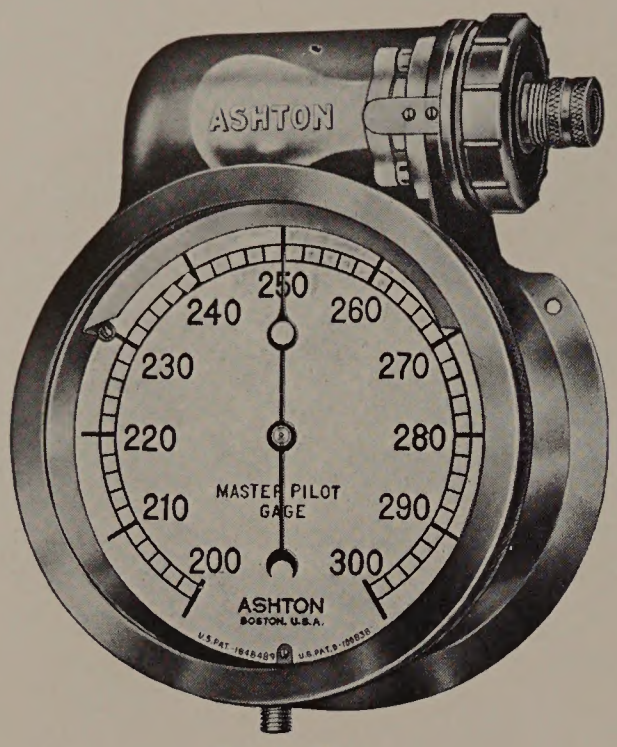
Other Dimensions and Part Lists on page 17

PRICES ON APPLICATION

ASHTON

Locomotive Master Pilot Steam Gage

SINGLE AND DOUBLE ILLUMINATED DIAL



Single Dial
72 I-3

Size Gage
6¾-inch Dial

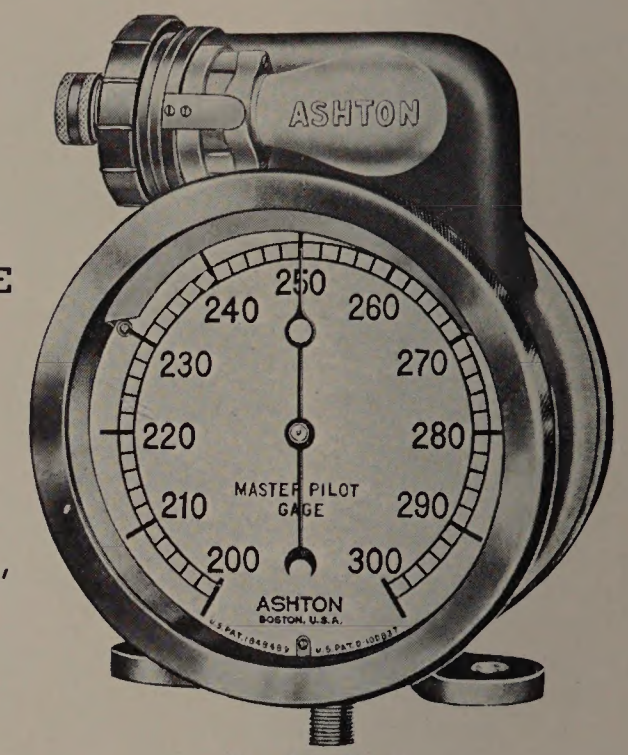
DUST-PROOF
LOCOMOTIVE STEAM GAGE

Iron or Brass Base

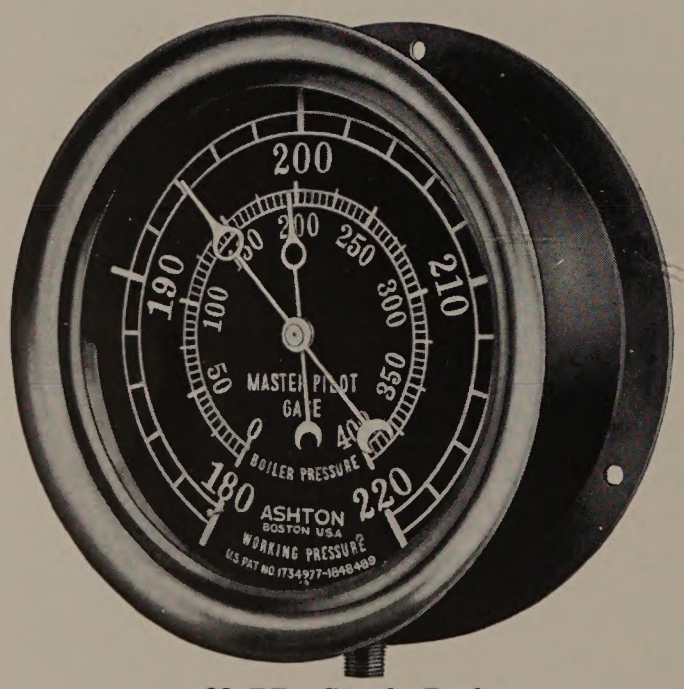
PATENTED

Furnished with
Flat White Porcelain "Non-Glare"
Enameled Dials

For Standard Graduations
300, 400, 500 and 600 pounds



Double Dial
52 DI-5
Note Cut Below

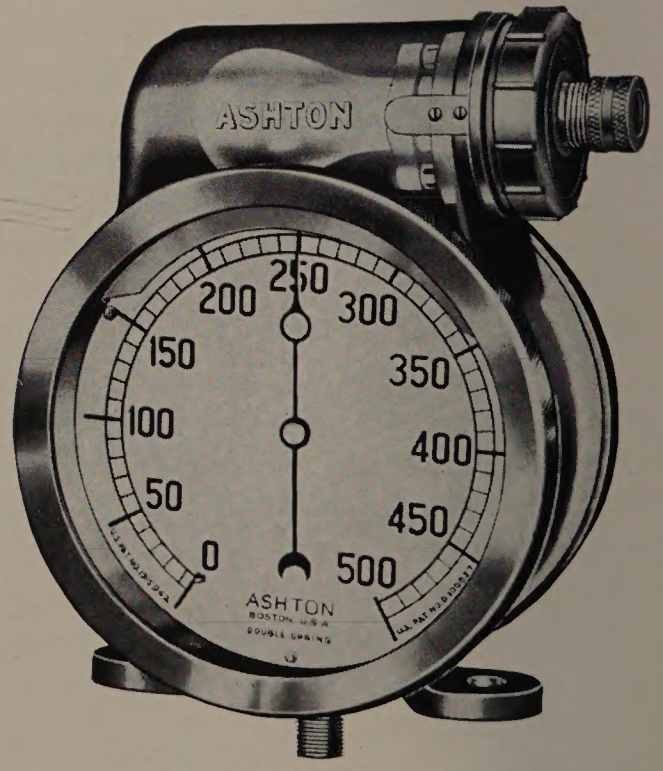


62 BB Single Dial
If Illuminated 62 BBI-3 Style

One side on the Double Dial No. 52 DI-5 style of the Gage has a dial which is direct reading from zero to the maximum pressure, and is graduated in the usual 5- or 10-lb. increments. The Gage is mounted on the back boiler head so this dial faces the engineman. On the other side of the Gage, facing the fireman, is the pilot steam dial as illustrated.

Part Lists
Weights and Dimensions
on pages 19, 20, 21 and 22

PATENTED

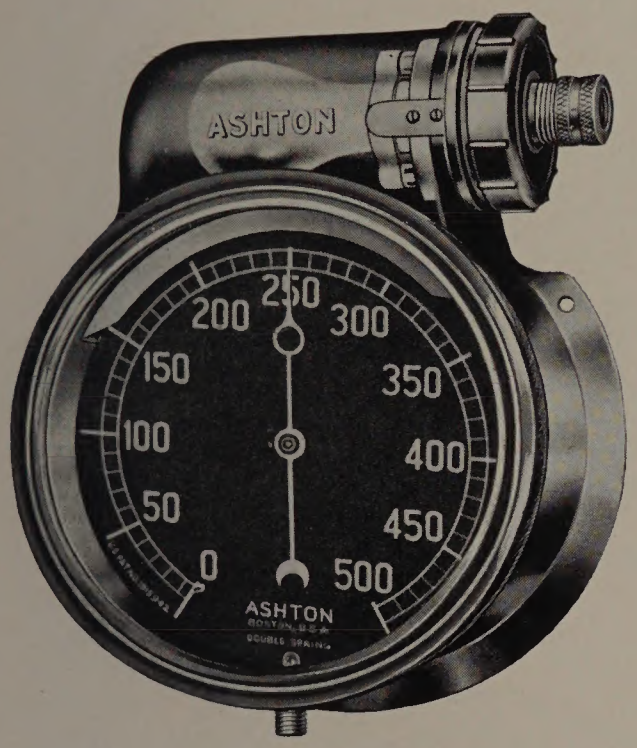


Double Dial 52 DI-5
Reverse View

The Ashton Locomotive Master Pilot Steam Gages are constructed with special dials. With wide, coarse graduations of two pounds increments the enginemen may easily detect the slightest fluctuation within the range of the working pressure, and check the advancing steam, thus preventing waste through the safety valves, or reduction of pressure below the efficient and economical operating point. It is particularly adapted for stoker-fired and fuel-oil-burning locomotives, and will contribute to greater efficiency and economy through a more uniform boiler pressure.

Locomotive Steam and Duplex Back Pressure Gages

FOR INDICATING STEAM PRESSURE, ALSO THE BACK PRESSURE AND VACUUM IN LOCOMOTIVE CYLINDERS



52 LBC I-3

Locomotive Steam Gages

PATENTED

Size Gage, 6¾-inch Dial

The double spring construction minimizes vibration and permits tubes to be drained to prevent freezing.

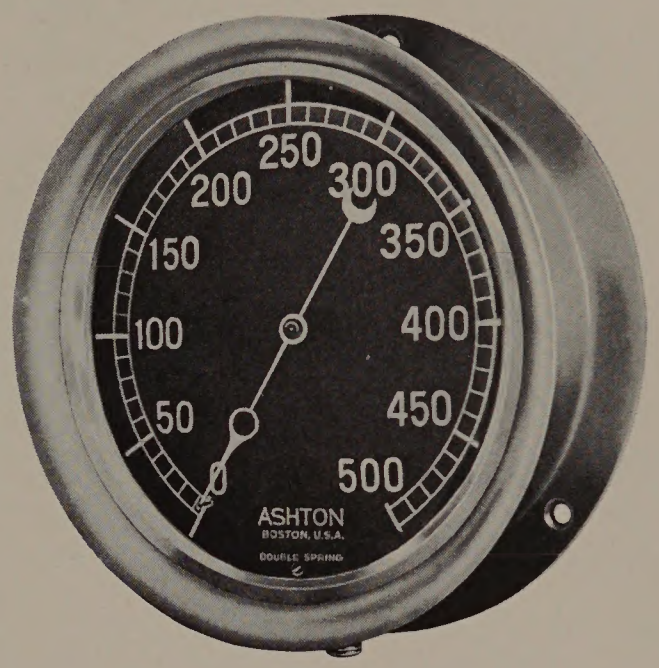
With Socket Extension Supporting Movement

Also furnished with Flat Black "Non-Glare" Dials Flat White Porcelain "Non-Glare" Enameled Dials

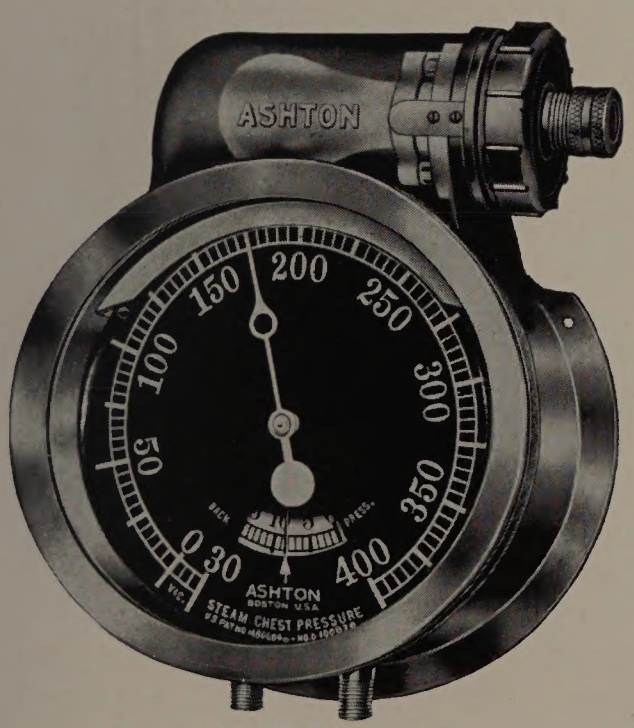
Dust-Proof Iron or Brass Case

Dials graduated to 300, 400, 500, 600 pounds are standard. We recommend Gage graduated to approximately twice working pressure.

Part Lists
Weights and Dimensions
on page 18



52 LBC

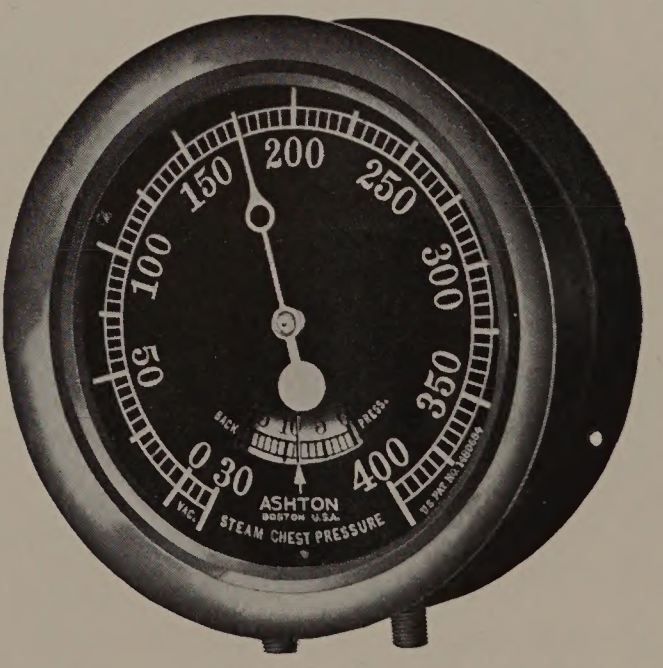


62 BPA I-3

Locomotive Back Pressure Gages

PATENTED

The Ashton Duplex Locomotive Back Pressure Gage is designed to register or indicate the effective pressure on the pistons of the locomotive; the steam chest pressure (large dial) pipe line being connected to the live steam passage between the throttle and the cylinder. The small dial indicates the amount of back pressure, the pipe line of which is connected to the exhaust passage of the cylinders.



62 BPA

When the locomotive is at rest both hands are at 0. When the throttle is open the large hand should gradually rise and indicate the maximum steam chest pressure, which should, in operation of the locomotive, be maintained as near the maximum boiler pressure as possible. As the locomotive gains speed, back pressure is built up and indicated on the small dial and the cut-off should be set back or reduced to use the steam expansively, thereby cutting down the back pressure.

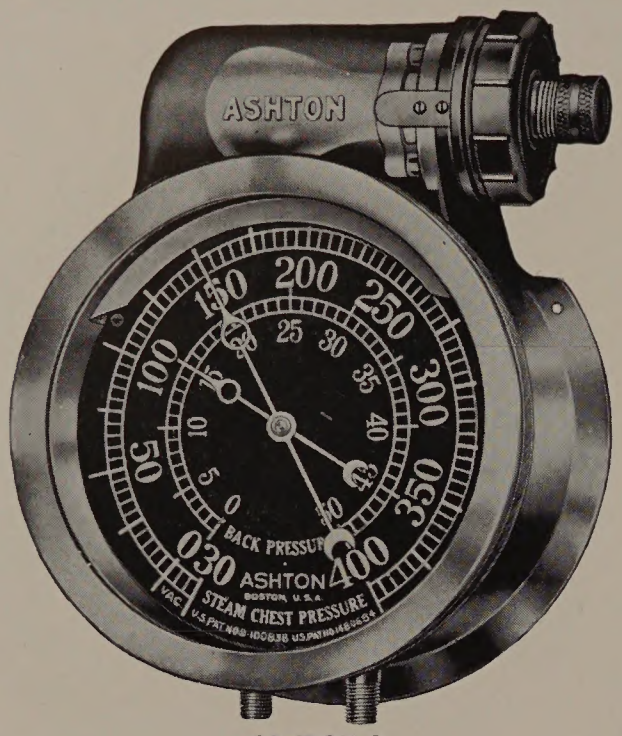
The difference between the two pressures, namely steam chest pressure minus back pressure, represents the actual effective power in the cylinder.

It is most desirable to operate the locomotives with a minimum difference between the working boiler pressure and the initial steam chest pressure, with the proper throttle opening and position of reverse lever, so as to maintain the desired running speed and carry as low a back pressure as possible.

Parts Lists, Weights and Dimensions on pages 21 and 22

ASHTON

Locomotive Duplex Back Pressure and Vacuum Gages



62 BOI-3

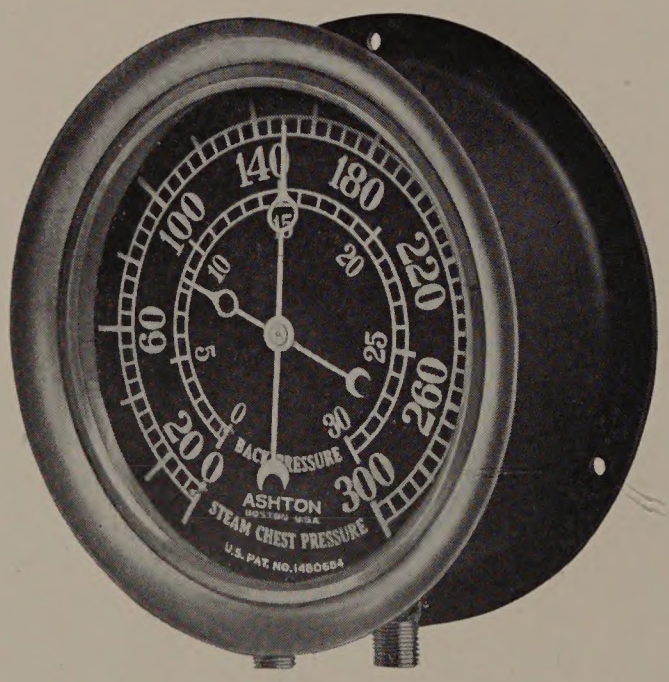
Size Gage
6¾-inch Dial

Iron
or
Brass Case

PATENTED

62 BO

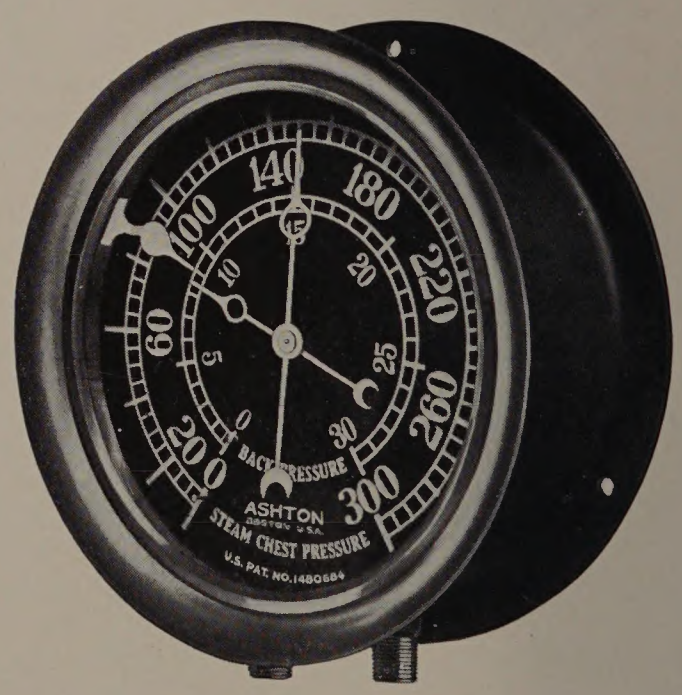
The Ashton No. 62 BO Gage, illustrated above, is similar to No. 62 BA (illustrated below) in design, size, etc., but with the inside circle graduated to 50 pounds maximum for Back Pressure, and the outside circle, Steam Chest Pressure, graduated to a maximum of 400 pounds pressure and also 30-inch vacuum.



62 BA
If Illuminated 62 BAI-3

Part Lists
Weights and Dimensions
on pages 21 and 22

PATENTED



62 BAA with Lazy Hand
If Illuminated 62 BAAI-3

The Ashton No. 62 BA style Gage, illustrated above, is specially designed and constructed for indicating the steam chest pressure and back pressure in locomotive cylinders. It has been instrumental in producing some very satisfactory results in fuel economy by materially reducing the back pressure on locomotives. Without such a Gage the enginemen have but a vague idea of what constitutes a full throttle and how to adjust the cut-off to the best advantage.

The inside circle on the dial is graduated to 30 pounds and the hand indicates the back pressure. The outer circle is graduated to 300 pounds and the hand indicates the initial steam chest pressure, enabling the engineman at a glance to take advantage of the longest expansion possible in the cylinder and thus secure the maximum efficiency and economy. Furthermore, the Lazy Hand on the Gage provides a telltale or indicator by which the enginemen may, from day to day, repeat the performance of the individual runs and not be dependent, as heretofore, on the sense of hearing or feeling to determine the best locomotive performance.

The pulsating pressures to which these Gages are subjected are extremely severe, and to reduce them to a minimum we recommend that the Ashton No. 120 Retard Device, as illustrated and described on the next page, be provided for both the steam chest and back pressure lines.

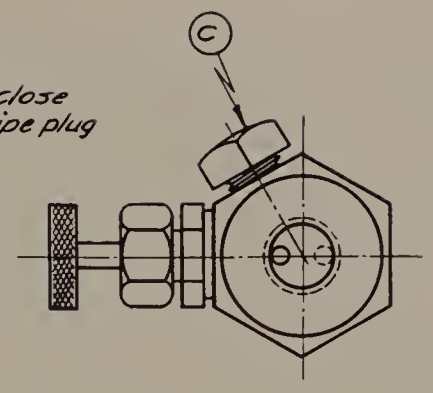
Pulsation Retard Device

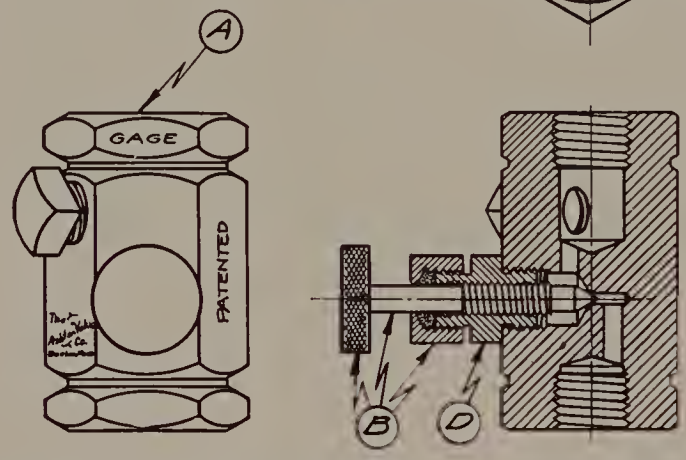
120 Style

Patented

The Ashton No. 120 Pulsation Retard Device, illustrated above, is especially designed to retard pressure pulsations, as its name implies. It consists of a needle valve, having a very sharp point which may be adjusted to effectively retard the pulsations and eliminate the vibration of the Gage hand.

To blow out sediment close needle valve, remove pipe plug and open needle valve





There is a blow-out passage through the body "A" and across the seat of the needle valve "B," and by removing plug "C" it is possible to blow out any sediment that may have lodged on the seat or in the passage.

This device is especially designed to retard the pulsations to which the Ashton No. 62 BP, No. 62 BPA, No. 62 BA and No. 62 BO steam chest pressure and back pressure Gages are subjected on locomotives.

We recommend that both the high and low pressure units of the Ashton No. 62 BA, No. 62 BP, No. 62 BPA and No. 62 BO Gages be protected from the severe pulsations by installation of the Ashton No. 120 Retarding Device which is made for ¼-inch standard pipe thread connections, and this device should be installed in the pipe line below the usual steam gage siphon, which further prevents the condensation in the siphon from being blown out and live steam allowed to enter the gage tube. **Blueprints showing piping arrangement for connecting up the Gage and Retard Device will be furnished on request.**

Dimensions: 2⅜-inch wide, including needle valve, 2¼-inch long. Weight: ¾ pounds.

Locomotive Stoker Gages

52-13 Main Steam Gage

Both Gages are 5-inch size, have movements with wide sectors of cast phosphor bronze, nickel silver pinions and shafts, and phosphor bronze bearing bushings in top and bottom plates.

All Ashton Stoker Gages are now provided with chokes in sockets to minimize pressure pulsations, also safety disc on back of case to prevent accumulation of pressure therein. Rings are OG, threaded. Connections are ¼-inch pipe size, male. Orders should specify style number of Gage as shown under cuts, pressure, iron or brass case and marking on dial. Siphons filled with water must be used with all steam Gages. Furnished without cocks or fittings.

62 BU Steam Jet Gage

These illustrations show modifications of Ashton No. 52 LBDB and No. 62 BU Gages with special dials for use with locomotive stokers. The Main Steam Gage has silvered or black dial graduated to 250, 300 or 400 pounds. The double spring construction of the No. 52-13 minimizes vibration and permits tubes to be drained to prevent freezing. The No. 62 BU Steam Jet Gage has silvered dial graduated to 150, 250, 300, 350 or 400 pounds, black and red hands. Can also be furnished with black dial, white and red hands.

Part Lists, Weights and Dimension on pages 23, 24 and 28.

Locomotive Stoker Gages

52-13

Size Gage
5-inch Dial

Iron or Brass Case

Part Lists
Weights and Dimensions
on pages 23, 24 and 28

62 BZ

The above Gages are especially designed for Stoker Service. The No. 52-13 is of double tube construction with movement suspended on socket casting. Movements have wide sectors of cast bronze, nickel pinions and shafts, OG threaded rings or flush style when so specified. Black dials have white and red hands, silvered dials, if so ordered have black and red hands. Orders should specify style number, pressure, iron or brass case, black or silvered dials, also service marking on dial. Connections are ¼-inch pipe size. Siphons filled with water must be used with all steam Gages.

Combination Locomotive Stoker and Duplex Air Brake Gages

62 BAB-1

Size Gage
5-inch Dial

Iron or Brass Case

Part Lists
Weights and Dimensions
on pages 24 and 28

PATENTED

Silvered Dials

62BAB-2

The Ashton No. 62 BAB-1-2 Gages illustrated above are provided with dials having quadruple service marking as required on various makes of stoker equipment, graduated 150 or 250 lbs. The cover plate may be rotated to display the correct marking "shown in phantom" on the cuts. This is accomplished by springing the plate over a small dowl and moving it to the desired position. The No. BAB-2 Gage is made with combination service marking for stoker and air brake equipment. The interior construction case rings, etc., are the same as the 5-inch Ashton Duplex Stoker and Air Brake Gages. REDUCE YOUR STOCK. With these Gages it is unnecessary to carry in the storeroom a variety of gages different only in the service markings on the dials. Made with OG face rings above or flush rings as illustrated on the next page.

Improved Duplex Air Brake Gages

62 B Fig. 1

5-inch Dial

Iron or Brass Case

Part Lists
Weights and Dimensions
on pages 24 and 28

62 B Fig. 2

These Gages are made with two independent springs and connections; the red and black hands indicate the individual service pressures as marked on dials and flanges. The movements are of substantial construction, with nickel silver pinions and shafts, sectors and bushings of phosphor bronze, springs of seamless drawn brass tubing. Sockets are cast in one piece, are of heavy construction and made to resist pipe strains that frequently affect the accuracy of some gages. Connections are ¼-inch pipe size, male. Rings are threaded cast brass. Orders should specify iron or brass case and Fig. 1 or Fig. 2.

62 BAC 5-inch Dial
PATENTED

Iron or Brass Case

Part Lists
Weights and Dimensions
on pages 24 and 28

The above Gage is provided with a dial having stamped thereon four commonly used air brake service markings. By moving the cover plate as explained on the preceding page, the desired marking is exposed. This quadruple dial marking avoids the expense of several duplicate stocks of gages.

The construction otherwise is the same as the No. 62 B described above.

62 C 3½-inch Dial
Small Pattern

This Gage is similar in construction and operation to the No. 62 B Duplex Air Brake Gage shown above, but is of smaller size with 3½-inch diameter dial. It is used specially on locomotive driving wheel brake systems, and is made with special back flange so as to occupy as small a space in the locomotive cab as possible.

Sockets are cast in one piece, are of heavy construction and made to resist pipe strains that frequently affect the accuracy of some gages. Ring is threaded cast brass, flush style. Movement has nickel silver pinions and shafts, phosphor bronze sectors and bushings. Dial is silvered. Connections are ¼-inch pipe size, male. Orders should specify style number of Gage, iron or brass case.

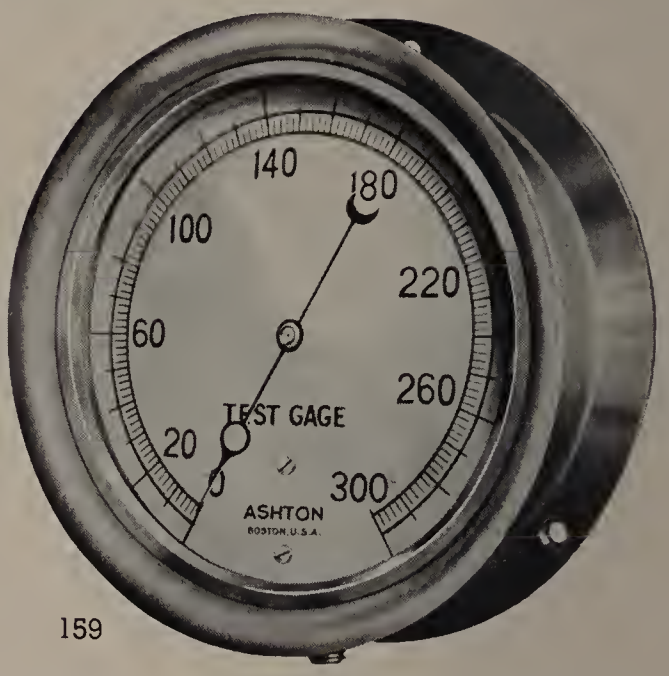
Air Brake and Standard Test Gages

62 BR 6-inch Dial

Duplex Air Brake Test Gage

The Duplex Air Brake Test Gage is designed more particularly for use on test rack for indicating reservoir and brake cylinder pressures. The silvered dial is graduated in 1-lb. increments, 5-lb. spacings, and 20-lb. figures, up to 160 lbs. maximum, and marked "Red Hand—Aux. Res.," "Black Hand—Brake Pipe," unless otherwise specified. Made in the 6-inch dial size, brass case only.

Weights and Dimensions on page 28

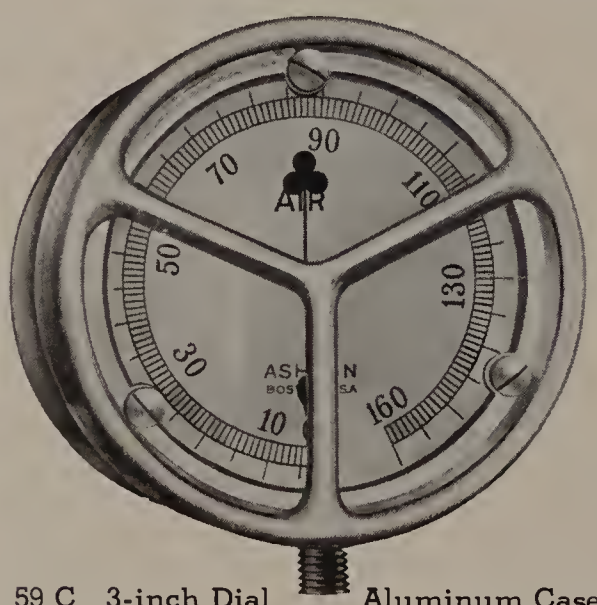


159

The Ashton Standard Test Gage is constructed for extreme accuracy and sensitiveness, and can be relied upon, whether used for testing other gages or for indicating pressure under conditions calling for extreme precision.

Every care is exercised both in workmanship and selection of material; each Gage is tested by Dead Weight Gage Tester and graduated as shown above. Regularly graduated to 300 pounds, but can be graduated to any desired pressure. Sizes 3½, 4½, 6, 6¾, 8½, 10 and 12-inch dials. Orders should specify style of case and maximum pressure.

160 pounds maximum	1 pound marks
300 pounds maximum	2 pound marks
500 pounds maximum	5 pound marks



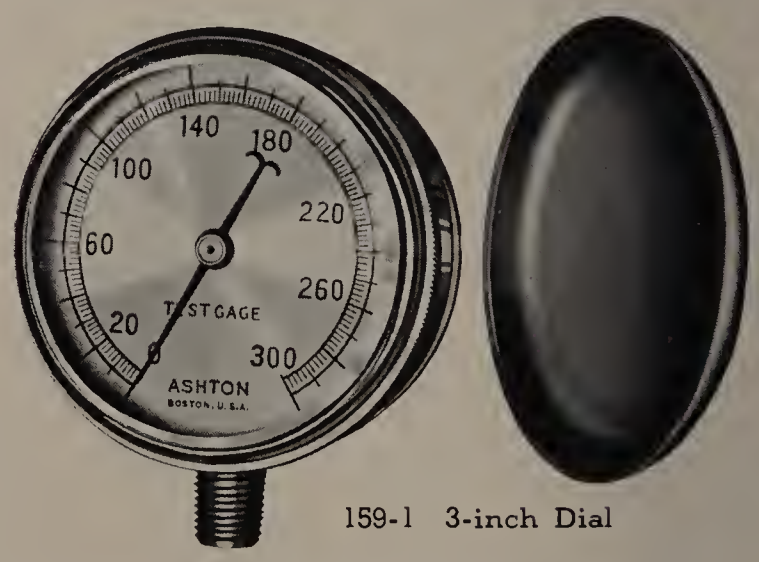
59 C 3-inch Dial Aluminum Case

Protected Dial Gage

The Ashton Protected Dial Gage is specially designed to suit the requirements in air brake service and particularly in connection with the rear end train brake cock. With such a gage rear end trainmen having in charge the backing of trains can know at a glance the exact pressure on the brake system, assuring perfect control. It is also a handy and practical instrument for use of Air Brake Inspectors in repair, classification and passenger-car yards.

The face of the Gage is protected from damage by having the transparent celluloid disc and the dial set considerably below the top rim, and furthermore by protecting crossbars. These bars will not only prevent ordinary projections from penetrating the Gage, but will also stand being struck with considerable force without breaking. This Gage is made in the 3-inch dial size, with ¼-inch pipe connection, and has aluminum case and ring with the crossbars combined with the ring in one casting.

Part Lists
Weights and Dimensions
on pages 26, 27 and 28



159-1 3-inch Dial

Standard Pocket Test Gage

A neat, light Test Gage of suitable size for carrying in the pocket or tool box. It weighs only about one pound. For perfect protection of dial and hand, this Gage has bevel plate glass front with metal cover. Used principally by air-brake inspectors, boiler inspectors, and master mechanics, it is graduated for any desired pressure up to 500 pounds. The 3-inch diameter of dial limits the graduations as follows:

160 pounds maximum	1 pound marks
300 pounds maximum	2 pound marks
500 pounds maximum	5 pound marks

Made in brass case, N. P. case or aluminum case. Dial is silvered. Connection is ¼-inch pipe size, male. Orders should specify style number of Gage and maximum pressure.

Special Caboose and Single Air Brake Gages

51-23 5-inch Dial

Iron or Brass Case

Part Lists
Weights and Dimensions
on page 23

51-20 3½, 4½, and 5-inch Dial

Designed especially for caboose service. It is a constant indicator of the train line or brake pipe pressure—a telltale for the freight train conductor. It has large prominent figures and hand, so that train men may read it from a distance. The flush ring also gives a better view of the dial, and being threaded on the case, reduces the chance of broken glass so common because of shocks and vibration.

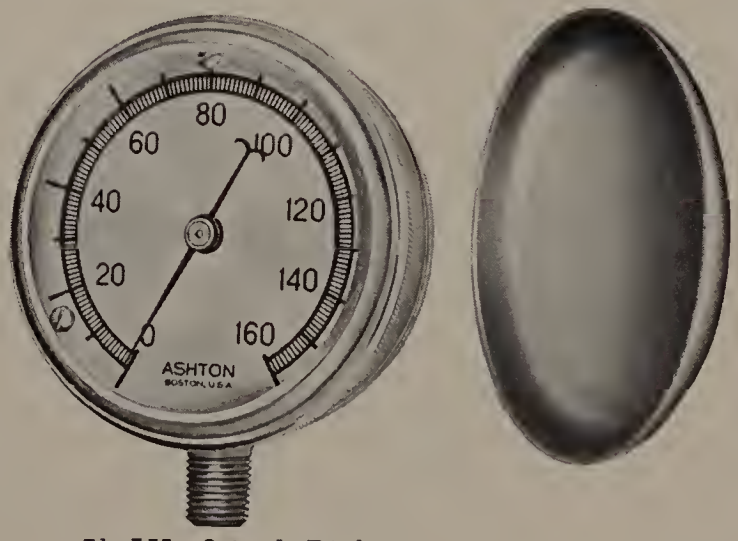
Made in 5-inch size, of the single spring type, iron or brass case, graduated to 150 pounds, with socket extension supporting movement and dial. The sturdy construction of this Gage, including movement with phosphor bronze bushings and sector, nickel silver pinion and shafts and above-mentioned threaded ring in contrast to light movement, spun ring or slip ring held on with screws commonly used on cheap gages, makes it particularly desirable for the severe use to which it is subjected. Orders should specify style number of Gage, iron or brass case. Dial is silvered. Connection is ¼-inch pipe size, male.

This Gage of the single spring type is made with socket extension supporting movement and dial and used in connection with Straight Air Brake Equipment on locomotives and also on test racks in repair shops. The dial graduation is similar to that of the Duplex Air Brake Gage. The large figures and flush threaded ring give a full and unobstructed view of the dial, making it possible to read the Gage at greater distance than can be done with the ordinary gage used for this service. Made in sizes 3½, 4½, and 5-inch, without cocks or fittings. Iron or brass case graduated 160 or 200 pounds as specified. Dial is silvered. Connection ¼-inch pipe size. Orders should specify style number of Gage, style of case, maximum pressure graduation.

Double Spring Locomotive Steam Heat and Single Spring Air Brake Service Gages

52-23 4½- and 5-inch Dial

Part Lists
Weights and
Dimensions
on pages 23 and 27



51 AH 3-inch Dial

This Gage is for indicating the pressure in the train heating system. It is of the same general design and high quality as our No. 52 LBC, but smaller, usually with 4½-inch dial, and graduated to 200, 230 or 300 pounds.

The double spring construction minimizes vibration and permits tubes to be drained to prevent freezing. Now made with socket extension supporting movement and dial. It is furnished with silvered, black, or white enamel dial as specified. The figures on the dial are large and prominent. The ring is flush style threaded. Two hundred thirty pound silvered dial is standard. Orders should specify style of Gage, size, style of case, iron or brass case, style of dial and maximum graduation. Connection is ¼-inch pipe size, male. Siphons must be used with all steam Gages.

The above 3-inch dial Air Brake Service Gage is similar in design and construction to the style No. 159-1 Pocket Test Gage illustrated on preceding page. It is especially adaptable for checking air brake pressures on train lines where a light-weight, sturdy and accurate Gage is required. Made only in 3-inch size, brass nickel plated case, silvered dial, graduated 160 pounds. ¼-inch pipe size, male connection. Weight one and a quarter pounds.

Locomotive Booster Steam and Feed Water Heater Gages

52 BB-13 5-inch Dial

The Gage illustrated above is of sturdy construction, built to give dependable service on auxiliary power units or Locomotive Boosters where the service is intermittent. It is of double spring construction, made in brass or iron case with brass flush threaded ring, silvered, black or white porcelain enameled dials. Orders should specify the above details. Ample siphons must be provided and filled with water to prctect all steam Gages.

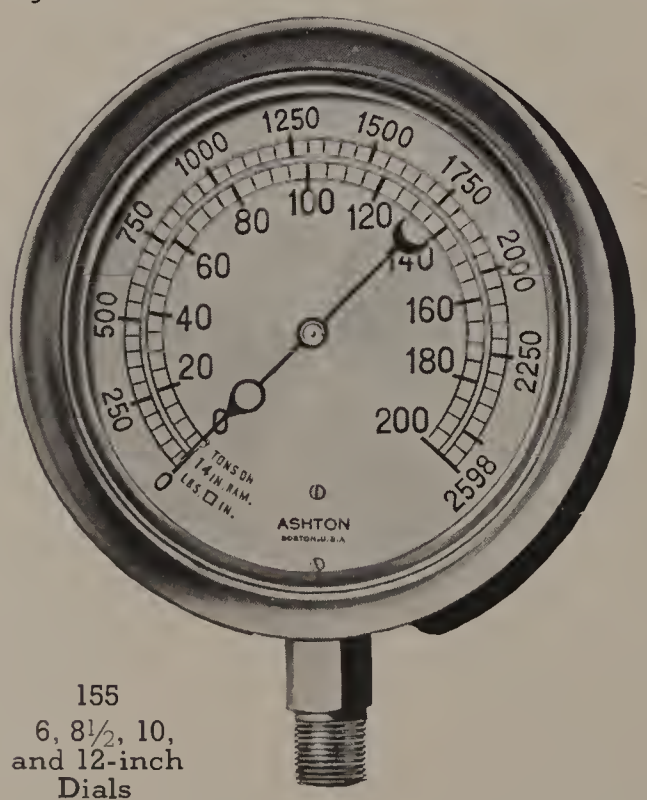
Part Lists
Weights and Dimensions
on pages 25 and 28

PATENTED

Booster and Feed Water Heater Gages are protected with chokes in sockets to minimize pulsations, also disc on back of case to prevent accumulation of pressure therein.

51 E 5-inch (Worthington)
51 S 6-inch (Elesco)

These Gages were designed to withstand extreme and rapid variations of pressure. The No. 51 E is extensively used on Locomotive Feed Water Heaters and has given good satisfaction in this very severe service. The above style Gages when so specified can be furnished with hard chrome plated movements to resist wear of the pinion and sector teeth. This may also be accomplished by protecting Gages in this service with the Ashton Pulsation Retard Device No. 120 described on page 7. It is regularly made in the 5-inch size in unfinished cast brass case, with black dial graduated to 400 pounds. Worthington dial. Designating numbers of Gages other than above are: Nos. 51 EA–51 E without Worthington dial. Flush threaded ring is standard. The No. 51 S is used for similar service. It is regularly made in either iron or finished brass case, with black or white porcelain dial graduated to 400 pounds. Both styles have a spring stop for the sector which prevents damage to the hand on sudden release of pressure. Connection is ¼-inch pipe size, male.

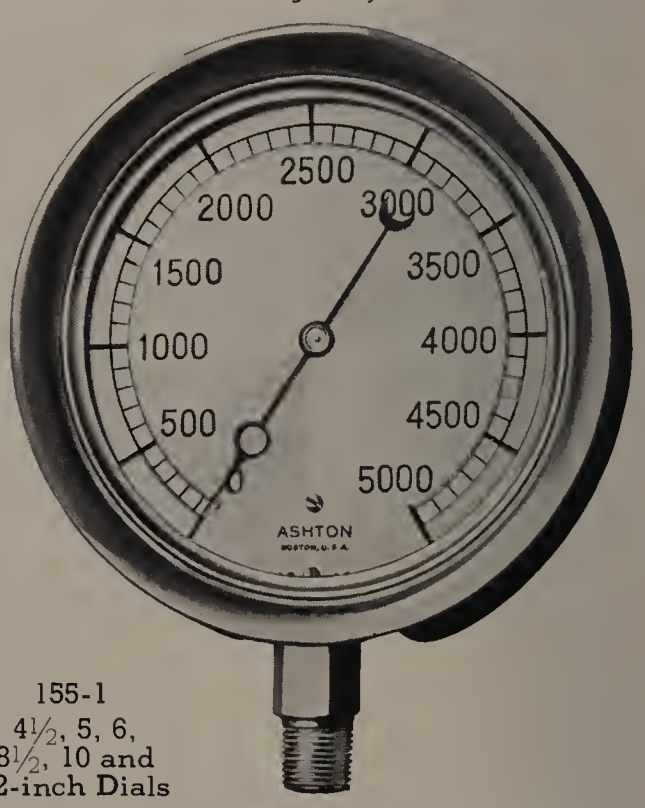


155
6, 8½, 10, and 12-inch Dials

Hydraulic Gages

Iron or Brass Case

Part Lists
Weights and Dimensions
on application



155-1
4½, 5, 6, 8½, 10 and 12-inch Dials

Ashton Standard Hydraulic Gages, Nos. 155 and 155-1, are intended for use on high pressures. The steel tube or spring is bored from solid bar stock, carefully heat treated and rust proofed to prevent corrosion. These Gages are accurate and durable. Standard Gages are graduated as high as 10,000 pounds. Higher graduations can be furnished. No. 155 has dial marked in both pounds per square inch and corresponding "tons on ram." All orders should state exact diameter of ram and also maximum and minimum working pressures on which the Gage will be used. No. 155-1 Gage has general construction same as No. 155 above, but with dial marked only in pounds per square inch. Standard connection : ½-inch male NPT thread. Iron case Gages have spun brass slip ring in sizes 6 inches and smaller, and cast slip ring in larger sizes. All brass case Gages have cast brass threaded ring.

Dead-Weight Gage Tester

179—180

WITH DOUBLE AREA PISTON

The Ashton Dead-Weight Gage Tester, as shown above, offers in convenient form an improved method for accurately testing Pressure Gages by means of weights, and is a recognized standard extensively adopted for this important service. Its accuracy closely approaches that of the mercury column, and has the added advantage of compactness, portability, and much lower cost.

This Tester is also an improvement over the ordinary styles of Dead-Weight Testers because of its distinctive construction with double area plunger. This exclusive feature renders it possible to make tests within its designated range of pressure with only one-fourth the usual number of weights, which is a matter of considerable convenience as well as economy of time. The Gage shown in above illustration is not furnished, being merely an illustration of a gage as applied for test.

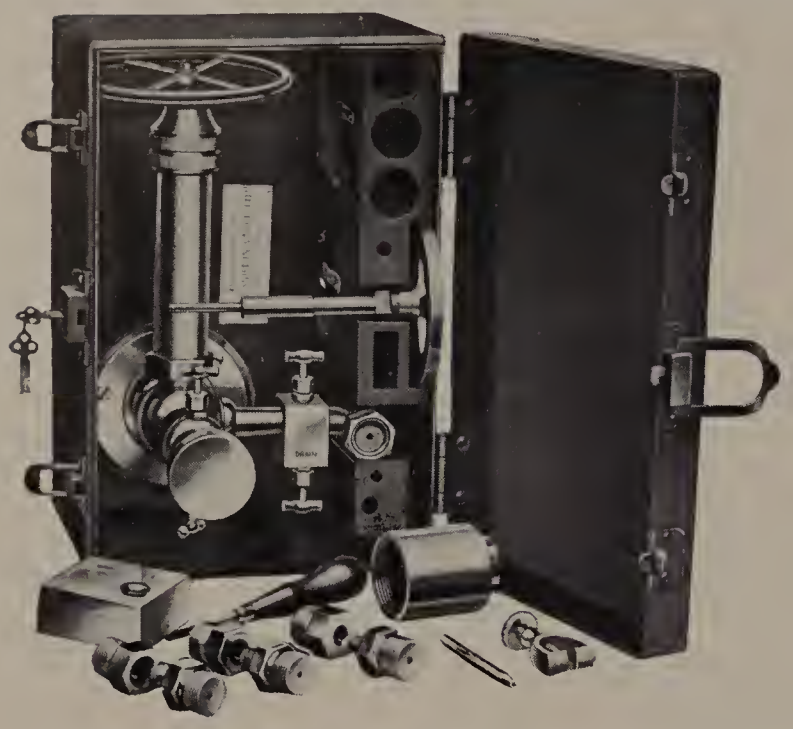
When testing at low pressures, the instrument should be adjusted to use the combined large and small areas of plunger. This is accomplished by closing the cock on left-hand side of vertical cylinder and opening the right-hand one. For testing at high pressures no additional weights are required, it being merely necessary to reverse the adjustment of the cylinder cocks. Before reversing the adjustment, however, it is advisable to remove all pressure in the Tester by unscrewing the hand wheel. Then the cock on the left should be opened and that on the right closed. This makes use of only the small area of the plunger, and the pressure then exerted will be four times as great as before, and applies to the weight holder as well as to each of the weights, increasing the testing capacity to full maximum.

The pressures exerted on the Gage are as follows:

	Combined Area	Small Area
Plunger and Weight Holder	5 lbs.	20 lbs.
¼ pound weight	1¼ lbs.	5 lbs.
½ pound weight	2½ lbs.	10 lbs.
1 pound weight	5 lbs.	20 lbs.
2 pound weight	10 lbs.	40 lbs.
4 pound weight	20 lbs.	80 lbs.

Each weight is marked with the number of pounds per square inch it will exert on the Gage with either combined area adjustment or small area adjustment. When additional testing capacity is desired, it can be accomplished up to 2,000 pounds by ordering extra weights at a nominal expense.

Dead-Weight Gage Tester Equipment



The Ashton Tester body is of bronze, nickel plated and, with fittings, is neatly packed in a welded steel box, with lock, having serviceable dull black finish. The weights also are in a similar box (or boxes) each of which has handle for convenience in carrying.

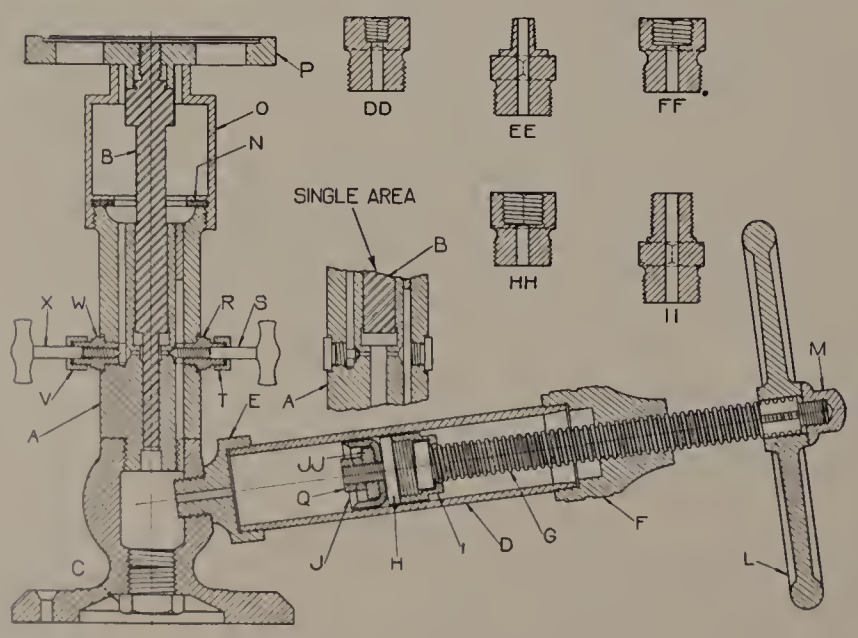
With each Tester is furnished a complete equipment of necessary weights and tools, consisting of screw-driver, oil can, gage hand puller, hand set, and six connecting nipples for attaching Gages.

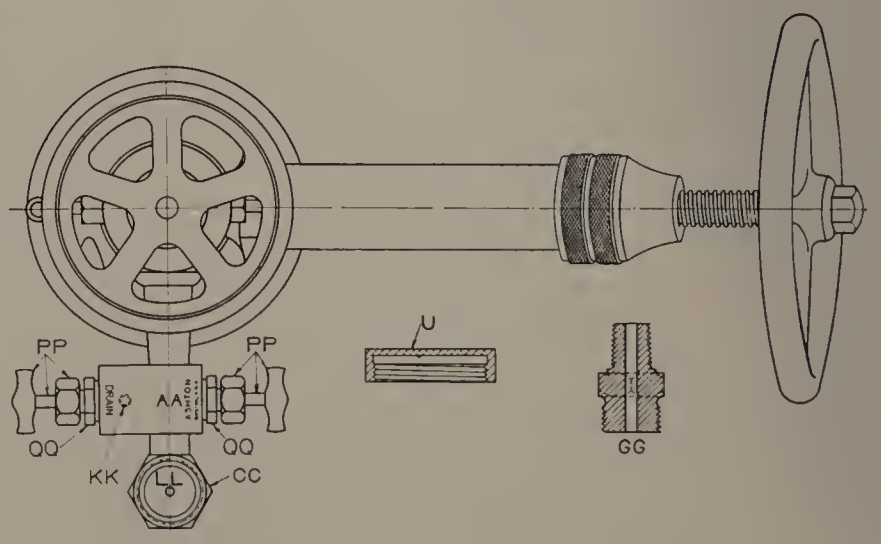
The weights furnished are for the following capacities:

Style	Capacity	Net Weight	Style	Capacity	Net Weight
179 C	200 lbs.	39 lbs.	179	1,000 lbs.	82 lbs.
179 B	300 lbs.	45 lbs.	180 A	1,500 lbs.	113 lbs.
179 A	500 lbs.	58 lbs.	180	2,000 lbs.	138 lbs.

Orders should always specify style number and, in addition, whether weights are wanted for testing up to 200, 300, or some other of the ranges mentioned above.

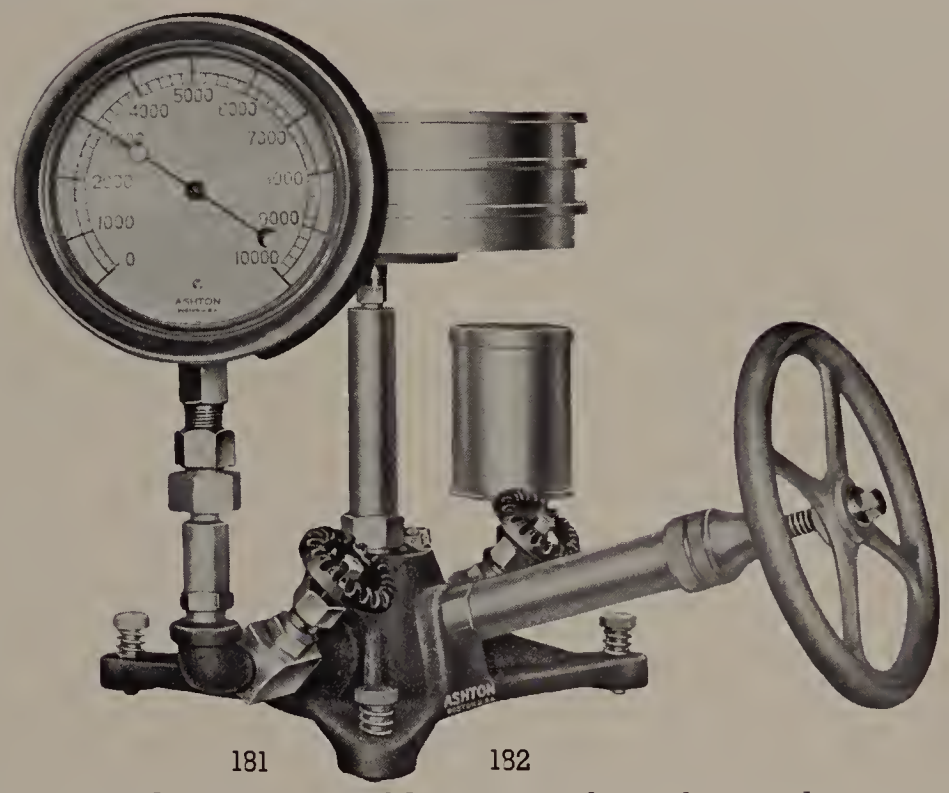
Complete instructions in detail for operating are furnished with each instrument.





Dead-Weight Gage Tester

For Medium High Pressure



181 182

The Tester here illustrated is of moderate size, suitable for testing Gages in pressure ranges higher than the capacity of the portable style 179, but below that where it would be desirable to employ the heavier style 86. This Tester is designed in two styles; the 181 having piston area of 0.05 sq. in. (minimum testing units 20 lbs.) with weights grouped in loads equivalent to 1,500, 2,000, and 3,000 lbs. per square inch, and the 182 having piston area of 0.02 sq. in. (minimum testing unit 50 lbs.) with weights grouped in loads equivalent to 4,000 and 5,000 lbs. per square inch. No. 182 can be furnished special for testing to 10,000 lbs.

This Tester is simple in construction and operation. The tripod base, fitted with knurled adjusting screws, provides a three-point support which, in conjunction with the built-in, cross-test level, provides for leveling the instrument on surfaces not in themselves plane or level.

Workmanship is of the highest grade. All joints are tested to pressure 100 per cent above the rated capacity of the Tester, and cup leathers and followers are fitted and tested to 10,000 lbs. per square inch. Pistons, ground, properly seasoned, and lapped to tolerances under 0.0001", are lapped to cylinders with great care and, if operated at temperatures between 70° and 100° F., will perform freely and accurately with a minimum of leakage past the piston.

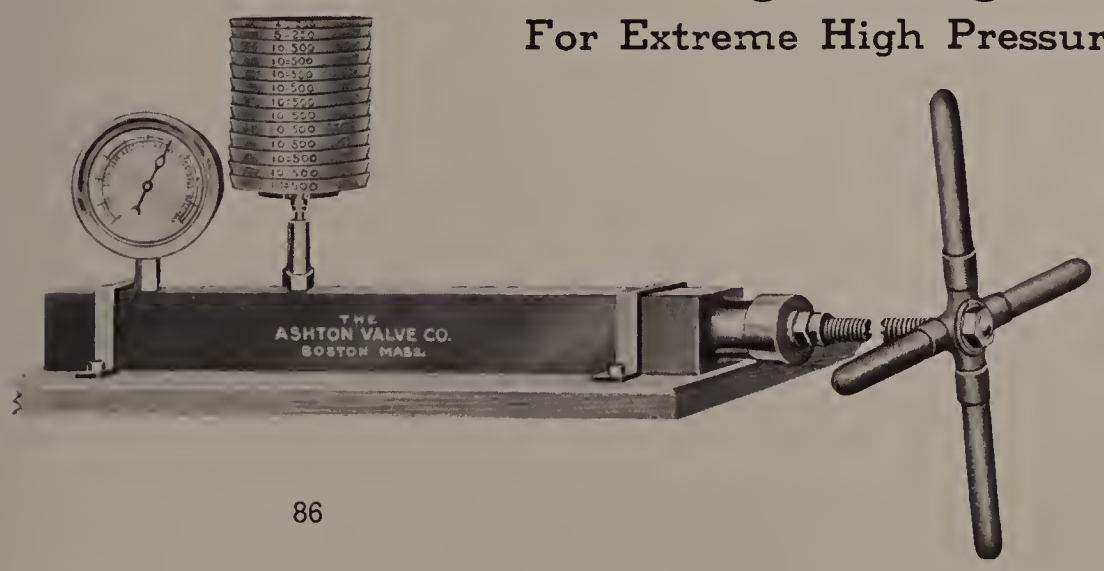
Weights, carefully machined and balanced, are of large diameter, reducing the height of the stacked pile at high pressures and furnishing a set-up that gives a long, easy spin. Tester and weights are shipped in boxes complete with all tools and accessories.

The Gage illustrated is not furnished, being merely an illustration of a gage as applied for test.

Weights of Testers with tools, 40 lbs. net. Weights of Testers with boxes, 75 lbs. net. Total net including weights and boxes: No. 181, 1,500 lbs. — 157 lbs.; 2,000 lbs. — 177 lbs.; 3,000 lbs. — 237 lbs.; No. 182, 4,000 lbs. — 156 lbs.; 5,000 lbs. — 176 lbs.

Dead-Weight Gage Tester

For Extreme High Pressure



86

The Ashton Tester here illustrated has single cylinder, otherwise constructed on the same principle as our regular Dead-Weight Gage Tester on page 13, but specially designed for testing Gages at extreme high pressures.

The body is made from a square solid bar of tool steel. The weight plunger is also of tool steel hardened, accurately ground and lapped into the cylinder. The Tester is easily operated at the highest pressures, by means of extra long iron pipe crossbar handles.

The Gage, board and clamps shown in cut are not furnished, but are merely used as illustration of a gage as applied for test.

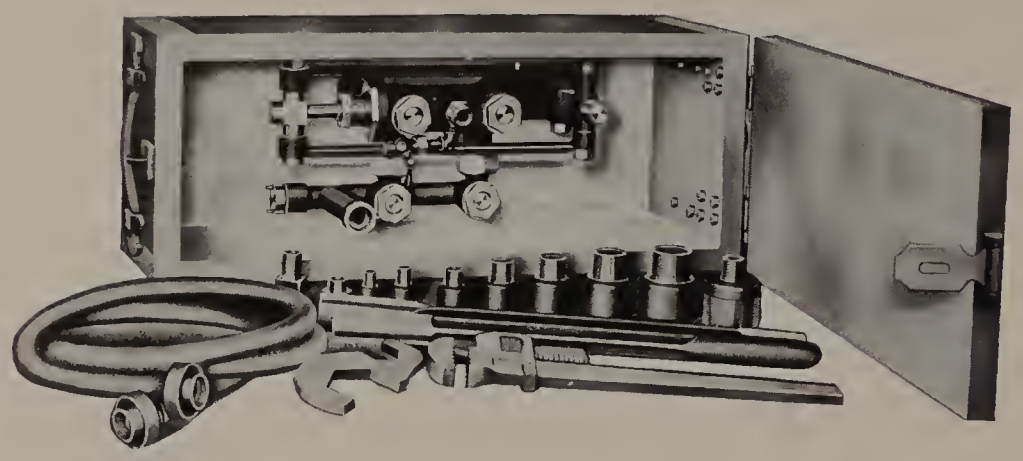
86 for testing to 10,000 lbs.
86 A for testing to 15,000 lbs.
86 B for testing to 20,000 lbs.
86 C for testing to 25,000 lbs.

NET WEIGHTS

Pump, without weights..... 150 lbs. Weights, for No. 86, 10,000 lbs..... 199 lbs.

For each 500 lbs. on Gage, add or subtract 10 lbs. from weights.

Portable Boiler Test-Pump Outfit



88—88 A

Specially adapted for making hydrostatic tests on locomotive and stationary boilers at outlying points, and extensively used by State and Boiler Insurance Inspectors.

Illustration shows style 88 Ashton Portable Boiler Test-Pump, with complete outfit of hose and all necessary fittings, as usually required, packed in a substantial iron-bound locked case. The following features of construction of practical value are embodied in this equipment.

The case is metal lined and watertight, therefore can be used as a reservoir for the Pump to draw from. The Pump has a supplementary water-service connection which can be used for the supply instead of the tank.

There are no interior parts of iron to rust, the Pump being made entirely of high-grade bronze. The suction valves can be taken out for repairs and the piston or rod repacked without removing the Pump body.

Style 88 Pump piston is 1¾" diameter, 3" stroke, double acting, capacity 250 lbs. per square inch.

Style 88 A Pump piston is 1¼" diameter, 3" stroke, double acting, capacity 500 lbs.

Size of case: width, 10½"; height, 11½"; length, 26". Stillson is furnished only when specified and at an extra charge. Weight, complete with fittings, 100 lbs.

Boiler Test Pump

Style 89 Ashton Boiler Test Pump here shown is a compact, convenient size Pump of the outside packed plunger style, having a 5" stroke and 1¼" diameter cylinder. It has a long, upright lever, which is handily operated from a standing position, and which can be readily disconnected at its lower socket end and set aside when not in use. Range to 500 lbs.

Style 89 A is similar to above except made with double cylinders, each .862" diameter. Range to 1000 lbs.

Pump bodies are made of high-grade cast iron, with bronze plunger and check valve, mounted on hardwood base, which can be held firmly in position while in use.

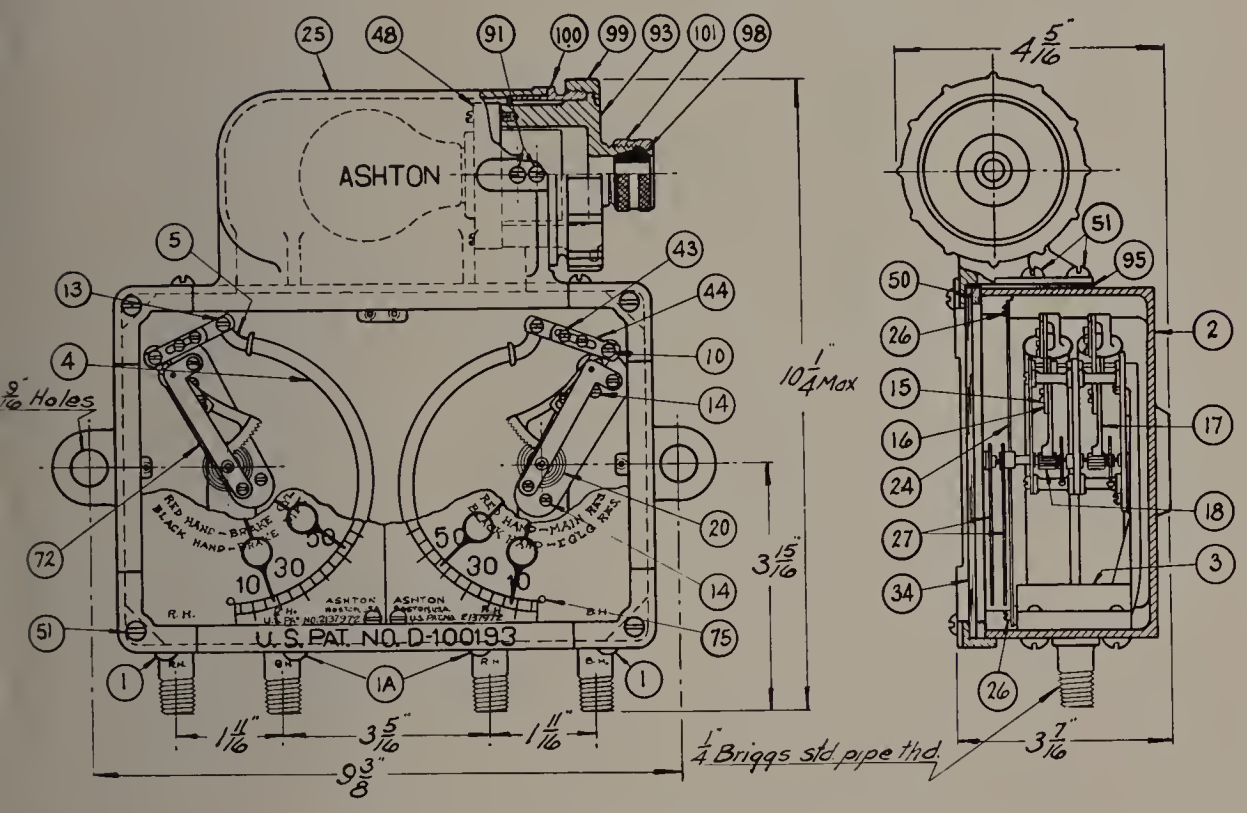
Width, 10"; height, without lever, 13¼"; length, 30"; net weight, 65 lbs.

89—89 A

ASHTON

5″ Dial Quadruplex Air-Brake Gage
6¾″ Double Dial Locomotive Steam Gage

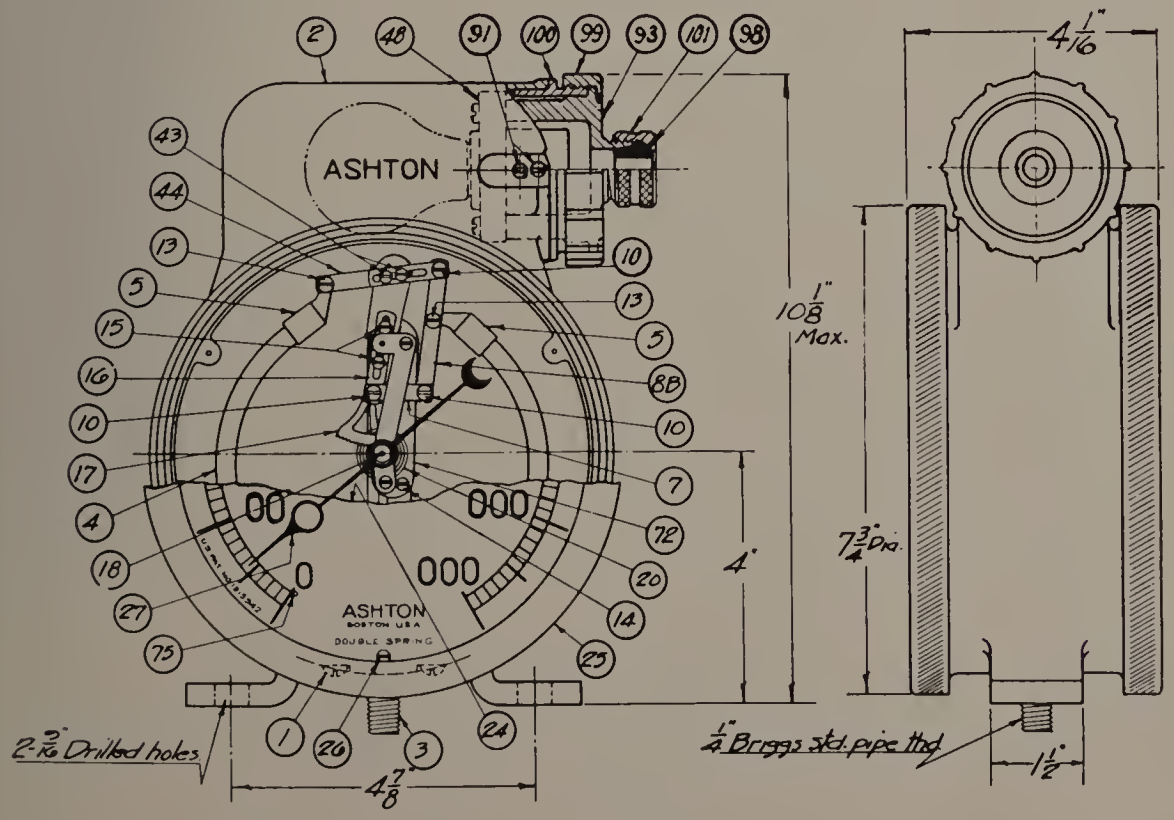
Part List for 5″ No. 62 QI-7 Gage



62 QI-7

Part No.	Name of Part	List Prices
1	Outside Socket Screw	$0.10
1A	Inside Socket Screw	.10
2	Case	8.00
3	Socket } Specify pressure and also	
4	Spring } specify left or right. Not	5.00
5	Tip } furnished separately	
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Screw	.08
16	Adjusting Slide	.10
17	Sector }	.60
18	Pinion } Specify upper or lower	.40
20	Hair Spring }	.20
24	Dial—Specify left or right, white or silvered	2.80
25	Gage Case Cover	5.50
26	Dial Screw	.05
27	Hand — Specify red or black	.20
34	Glass	.30
43	Adjustable Link Screw	.10
44	Adjustable Link Complete	.45
48	Receptacle	.70
48	Receptacle Holder Screw	.10
50	Front Gasket	.40
51	Gage Case Cover Screw	.10
72	Movement Complete; specify left or right	3.00
	We recommend ordering Movement Complete	
75	Hand Stop Pin	.05
91	Cap Bushing Screw	.05
93	Cap	1.20
95	Top Gasket	.07
98	Grommet	.15
99	Spanner Nut	1.50
100	Cap Bushing	3.00
101	Compression Nut	.45

Part List for 6¾″ No. 52 DI-3 Gage



52 DI-3

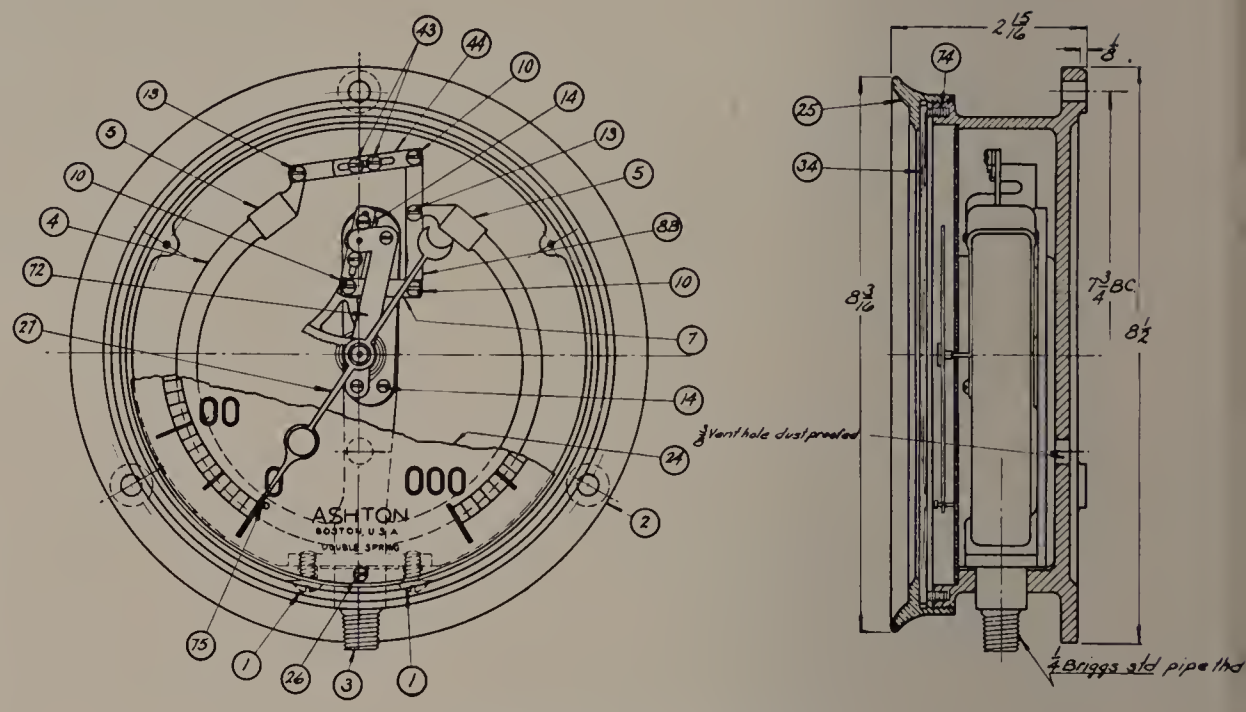
Part No.	Name of Part	List Prices
1	Socket Screw: Iron $0.08; Brass	.10
2	Case: Iron $9.90; Brass	16.70
3	Socket } Specify pressure. Not	
4	Spring } furnished separately	3.00
5	Tip }	
7	Movement Connection Arm	.10
8B	Lever	.20
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Lock Screw	.08
16	Adjusting Slide	.10
17	Sector: Old Style $0.60; New Style Balanced	.90
18	Pinion } White, silvered	.40
20	Hair Spring } or black. Clock-	.20
24	Dial—Specify pressure } wise or counter-	3.00
25	Ring } clockwise	3.50
26	Dial Screw }	.05
27	Hand	.20
34	Glass — Not shown	.20
43	Adjustable Link Screw	.10
44	Adjustable Link	.50
48	Receptacle	.70
48	Receptacle Holder Screw	.10
72	Movement Complete	2.50
	New Style Balanced	2.80
	We recommend ordering Movement Complete	
74	Felt — Not shown	.20
75	Hand Stop Pin	.05
91	Cap Bushing Screw	.05
93	Cap	1.20
97	Reflector (Not Shown)	.90
98	Grommet	.15
99	Spanner Nut	1.50
100	Cap Bushing	3.00
101	Compression Nut	.45

Standard Locomotive Steam Gage

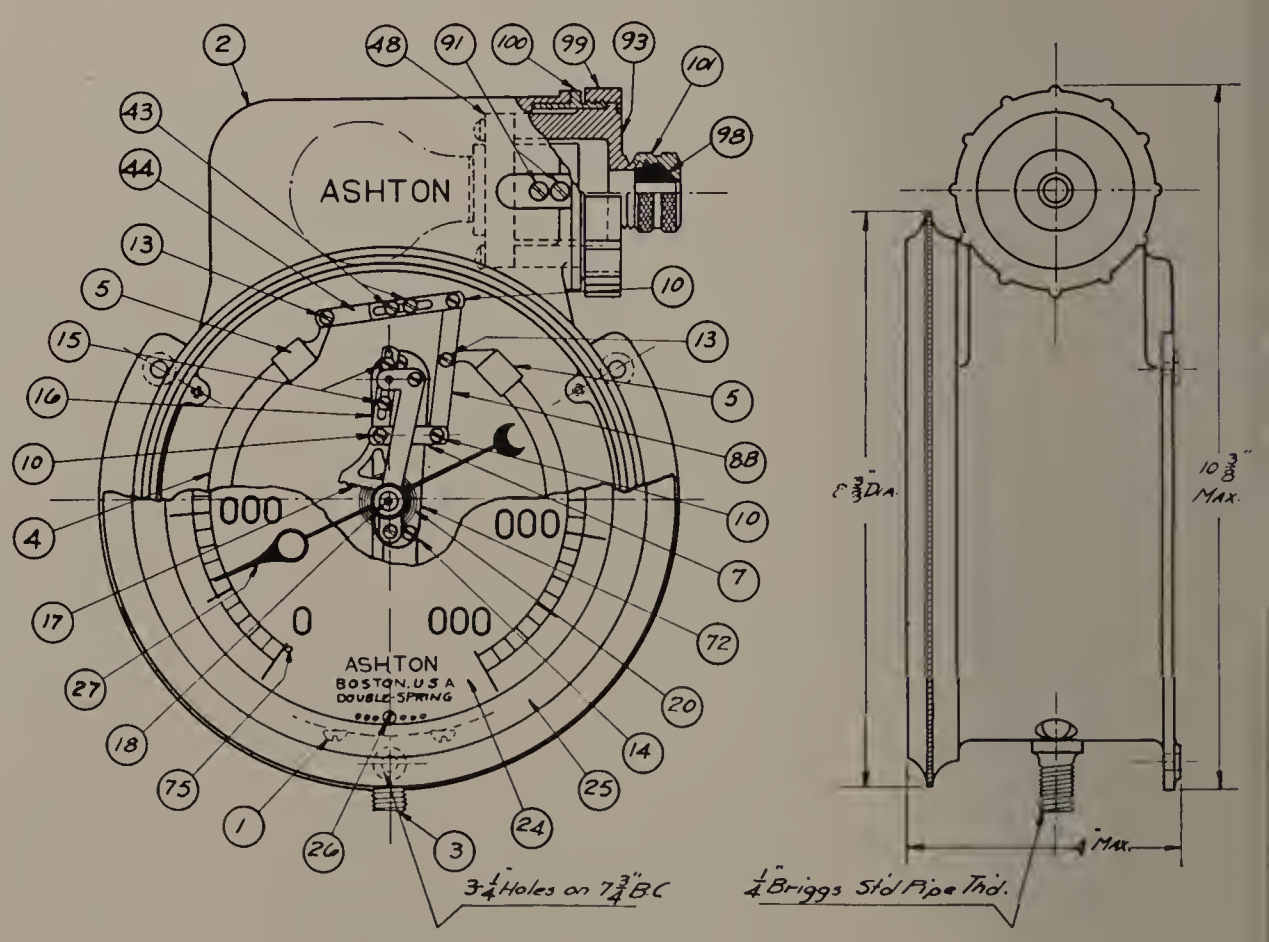
REFERENCE LIST OF PARTS

Part List for 6¾″ No. 52 LBC and 6¾″ No. 52 LBCI-3 Gages

Part No.	Name of Part	List Prices
1	Socket Screw: Iron $0.08; Brass ..... Specify iron or brass	$0.10
2	Case. No. 52 LBC: Iron, $3.50; Brass...	6.50
	No. 52 LBCI-3: Iron $10.00; Brass ... Specify iron or brass	13.00
3 Socket 4 Spring 5 Tip	Specify pressure. Not furnished separately	3.00
7	Movement Connecticn Arm	.10
8B	Lever	.20
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Lock Screw.....	.08
16	Adjusting Slide.....	.10
17	Sector	.60
18	Pinion	.40
20	Hair Spring.....	.20
24	Dial. Specify pressure: white, silvered or black	3.00
25	Ring. Specify O G or Semi-Flush.....	3.50
26	Dial Screw	.05
27	Hand. Specify black or white.....	.20
34	Glass. Not shown	.20
43	Adjustable Link Screw	.10
44	Adjustable Link. Complete	.50
48	Receptacle	.70
48	Receptacle Holder Screw.....	.10
72	Movement Complete	1.80
74	Felt. Not shown.....	.20
75	Hand Stop Pin	.05
97	Reflector. Not shown	.90
91	Cap Bushing Screw	.05
93	Cap	1.20
98	Grommet.....	.15
99	Spanner Nut.....	1.50
100	Cap Bushing	3.00
101	Compression Nut	.45



52 LBC Size 6¾-inch Dial



52 LBCI-3 Size 6¾-inch Dial

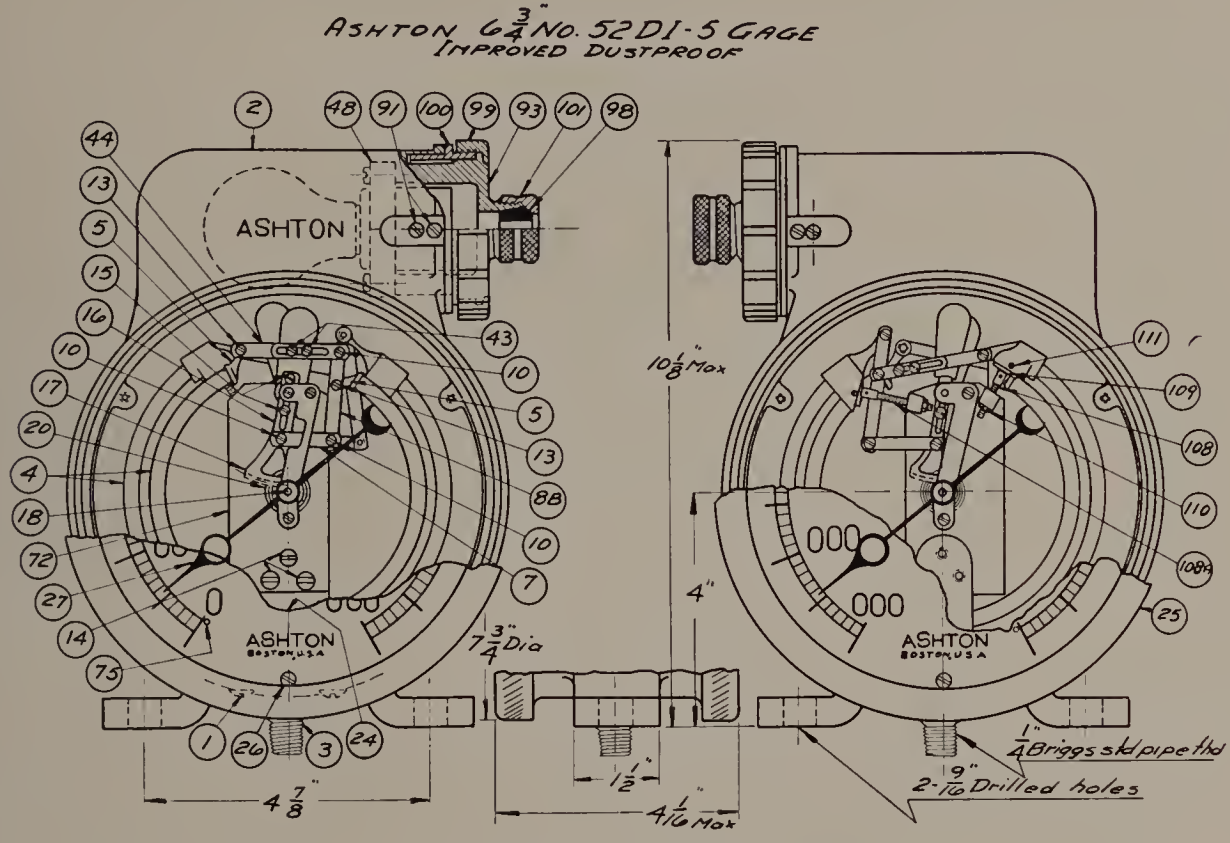
Weights: Iron and Brass

Non Illuminated, 10 lbs.

Illuminated, 13½ lbs.

We recommend ordering Movement complete. When ordering Parts from above list, always specify style, size, iron or brass, maximum pressure and whether dials are to be silvered, black or white enamel, Ring O G or Semi-Flush Styles.

Double Dial Locomotive Master Pilot Steam Gage



REFERENCE LIST OF PARTS

Part List for 6¾" No. 52 DI-5 Gage

Part No.	Name of Part	List Prices
1	Socket Screw: Iron $0.08; Brass	$0.10
	Specify iron or brass	
2	Case: Iron $9.90; Brass	16.70
	Specify iron or brass	
3	Socket	10.00
4	Spring — Specify pressure. Not furnished separately	
5	Tip	
7	Movement Connection Arm	.10*
8B	Lever	.20*
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Lock Screw	.08
16	Adjusting Slide	.10
17	Sector	.90
18	Pinion	.40
20	Hair Spring	.20
24	Dial	3.00†
25	Ring	3.50
26	Dial Screw	.05
27	Hand	.20

Part No.	Name of Part	List Prices
34	Glass. Not shown	$0.20
43	Adjustable Link Screw	.10
44	Adjustable Link Complete	.50*
48	Receptacle	.70
48	Receptacle Holder Screw	.10
72	Movement Complete	8.00
74	Felt. Not shown	.20
75	Hand Stop Pin	.05
91	Cap Bushing Screw	.05
93	Cap	1.20
97	Reflector. Not shown	.90
98	Grommet	.15
99	Spanner Nut	1.50
100	Cap Bushing	3.00
101	Compression Nut	.45
108	Spring Stop Screw	.30
108A	Spring Stop Screw	.30
109	Spring Stop Adjustment Key	.06
110	Spring Stop Screw Check Nut	.10
111	Adjustment Key Lock Screw	.10

* When ordering parts numbers 7-8B or 44, specify for Pilot Scale or full pressure scale and maximum graduations as required.

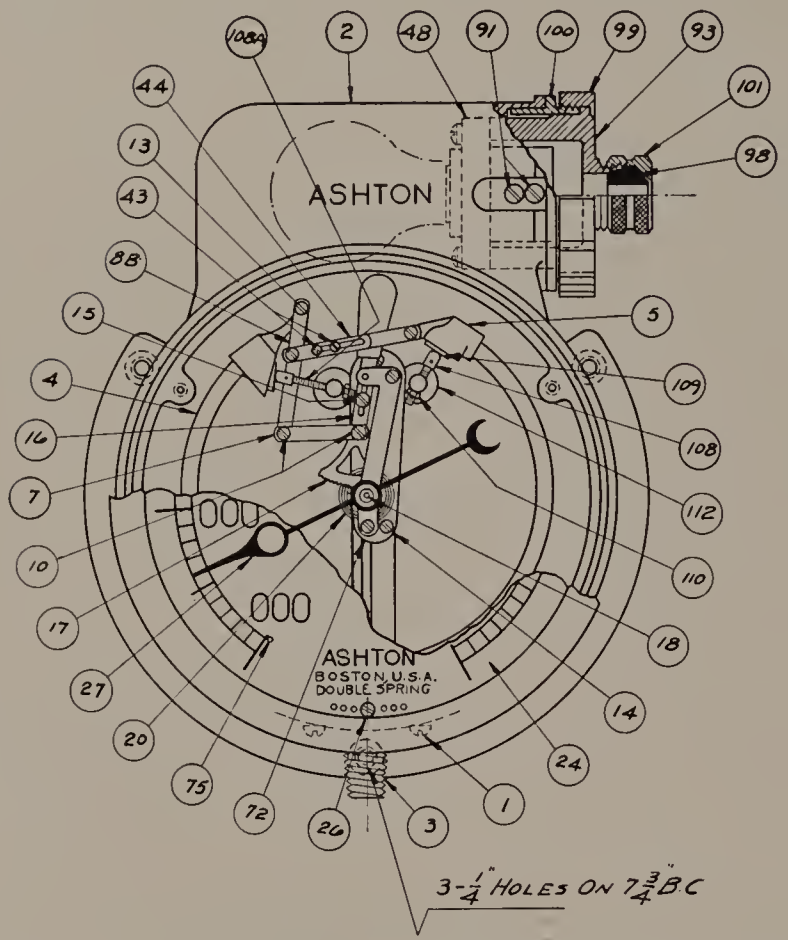
† When ordering DIAL part number 24, specify for Pilot Scale or full pressure scale and maximum graduations as required.

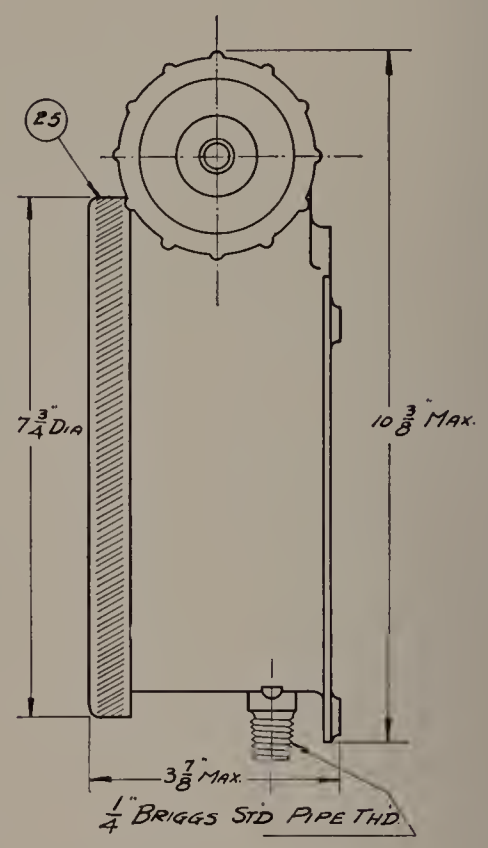
We recommend ordering Movement complete.

Weight: Iron and Brass Case 16 lbs.

Locomotive Master Pilot Steam Gage

SINGLE ILLUMINATED DIAL





REFERENCE LIST OF PARTS

Part List for 6¾" No. 72 I-3 Gage

Part No.	Name of Part	List Prices
1	Socket Screw: Iron $0.08; Brass	$0.10
	Specify iron or brass	
2	Case: Iron $10.00; Brass	13.00
	Specify iron or brass	
3	Socket	10.00
4	Spring — Specify pressure. Not furnished separately	
5	Tip	
7	Movement Connection Arm	.10
8B	Lever	.20
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Lock Screw	.08
16	Adjusting Slide	.10
17	Sector	.90
18	Pinion	.40
20	Hair Spring	.20
24	Dial. Specify white, silvered or black	3.00
	Also pressure range	
25	Ring	3.50
26	Dial Screw	.05

List No.	Name of Part	List Prices
27	Hand	$0.20
34	Glass. Not shown	.20
43	Adjustable Link Screw	.10
44	Adjustable Link Complete	.50
48	Receptacle	.70
48	Receptacle Holder Screw	.10
72	Movement Complete	8.00
75	Hand Stop Post	.05
91	Cap Bushing Screw	.05
93	Cap	1.20
97	Reflector. Not shown	.90
98	Grommet	.15
99	Spanner Nut	1.50
100	Cap Bushing	3.00
101	Compression Nut	.45
108	Spring Stop Screw	.30
108A	Spring Stop Screw	.30
109	Spring Stop Adjustment Key	.06
110	Spring Stop Screw Check Nut	.10
112	Stop Post	2.00
113	Stop Post Fastening Screw. Not shown	1.20

We recommend ordering Movement complete.

Weight: Iron and Brass Case 15 Lbs.

Locomotive Duplex Back Pressure and Master Pilot Steam Gages

62 BA, 62 BO, DIAL SIZE—6¾ inch

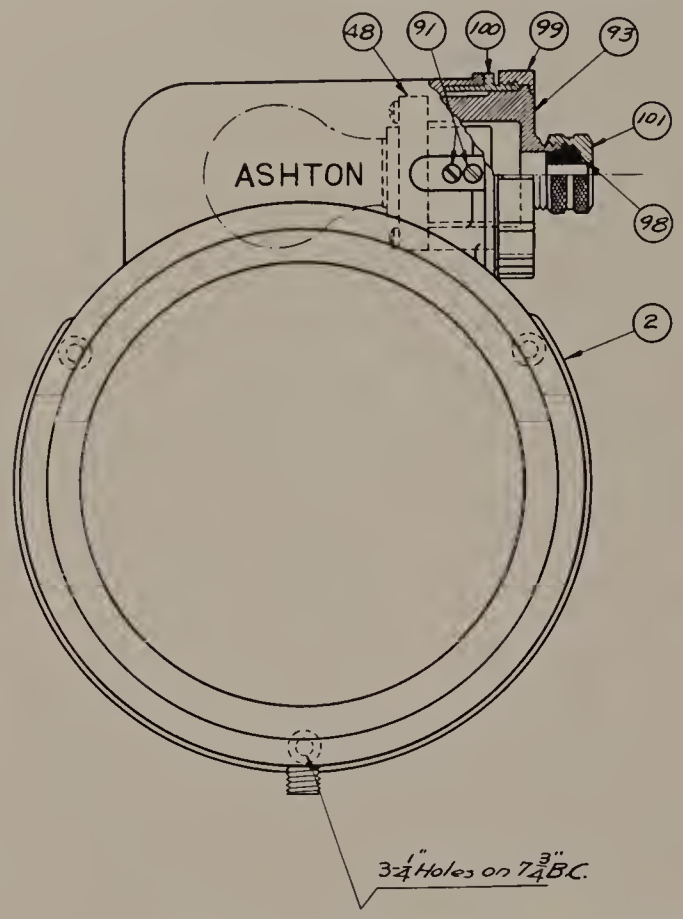
62 BP, 62 BPA, DIAL SIZE—6¾ inch

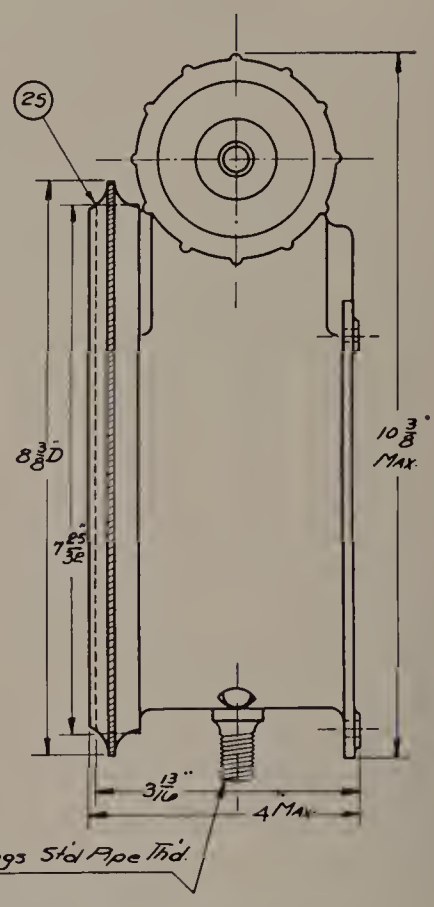
Locomotive Master Pilot Gage

62BB, DIAL SIZE—6¾ inch

For illuminated cases and list of Parts, see next page.

Locomotive Duplex Back Pressure and Master Pilot Steam Gages





All Duplex style Gages have two ¼" Briggs standard pipe connections

6¾-inch dial size illuminated Case can be furnished for the following style Gages: Nos. 62 BB, 62 BPA, 62 BO, 62 BA, 62 BAA. When ordering Springs (3, 4, and 5) or Dials (24), specify maximum pressure.

REFERENCE LIST OF PARTS

Fig.	Name of Part	Style: 62BA Size: 6¾"	62BAA 6¾"	62BO 6¾"	62BP 62BPA 6¾"	62BB 6¾"
		List Prices, Each				
1	Socket Screw ..... Iron	$0.08	$0.08	$0.08	$0.08	$0.08
	Socket Screw ..... Brass	.10	.10	.10	.10	.10
2	Case ..... Iron	4.00	4.00	4.00	4.00	4.00
	Case ..... Brass	8.00	8.00	8.00	8.00	8.00
3	Socket (Not furnished separately. Note above)					
4	Spring (Not furnished separately. Note above) ..	5.00	5.00	5.00	5.00	7.00
5	Tip (Not furnished separately. Note above)					
7	Movement Connection Arm.	.50	.50	.50	.50	.10
10	Connection Screw	.10	.10	.10	.10	.10
13	Tip Connection Screw	.10	.10	.10	.10	.10
14	Movement Case Screw.....	.10	.10	.10	.10	.10
15	Adjusting Slide Lock Screw.	.08	.08	.08	.08	.08
16	Adjusting Slide	.10	.10	.10	.10	.10
17	Sector	.60†	.60†	.60†	.60†	.60†
18	Pinion. Not shown.....	.40†	.40†	.40†	.40†	.40†
20	Hair Spring	.20†	.20†	.20†	.20†	.20†
24	Dial. Note below.....	4.50§	4.50§	5.00§	4.00§	5.00§
24R	Dial, Rotating, 62BP and 62BPA only. Note below..	...	...	...	2.60	...
25	Ring or Cover OG Style ...	3.50	3.50	3.50	3.50	3.50
26	Dial Screw.....	.05	.05	.05	.05	.05
27	Hand.....	.20¶	.20¶	.20¶	.20‡	.20¶
34	Glass. Not shown	.20	.20	.20	.20	.20
37	Tension Spring	.60	.60	.60	.60	...
38	Spring Stop Post	.40	.40	.40	.40	.40
39	Connection Arm Screw	.20	.20	.20	.20	...

Fig.	Name of Part	Style: 62BA Size: 6¾"	62BAA 6¾"	62BO 6¾"	62BP 62BPA 6¾"	62BB 6¾"
		List Prices, Each				
40	Connection Arm	$0.30	$0.30	$0.30	$0.30	...
41	Spring Stop Post Screw.....	.10	.10	.10	.10	$0.10
42	Spring Stop Post Washer...	.05	.05	.05	.05	.05
43	Adjustable Link Screw.....	...	...	...	...	.10
44	Adjustable Link complete ..	...	...	...	...	.50
	Lazy Hand. Not shown.....	1.50	1.50	1.50	...	...
76	Top Conn. Link. 62 BB only	...	...	...	...	.50
77	Adjustable Take-up Link.... 62 BB only	...	...	...	...	2.00
78	Take-up Link. 62 BB only ...	...	...	...	...	1.00
79	Pivot Post. 62 BB only	...	...	...	...	1.00
72*	Movement complete	3.00	3.00	3.00	3.00	5.00

Additional Parts for Illuminated Dial Gages

Part No.	Name of Part	List Prices
2	Case. Specify iron or brass ..... Iron	$10.00
	Case. Specify iron or brass ..... Brass	13.00
25	Ring. Specify flush or semi-flush.....	3.50
48	Receptacle.....	.70
48	Receptacle Holder Screw	.10
91	Cap Bushing Screw.....	.05
93	Cap.....	1.20
98	Grommet.....	.15
99	Spanner Nut	1.50
100	Cap Bushing.....	3.00
101	Compression Nut.....	.45

* It is more economical to order complete new Movements than their component Parts for reassembling. † Specify upper or lower.
‡ Specify black or white. § Specify silver or black. ¶ Specify black or white, long or short.
All list prices subject to discount. Weights: Non Illuminated Iron and Brass Case 9 lbs. Illuminated Iron and Brass Case 14 lbs.

ASHTON

Locomotive Steam and Air Gages

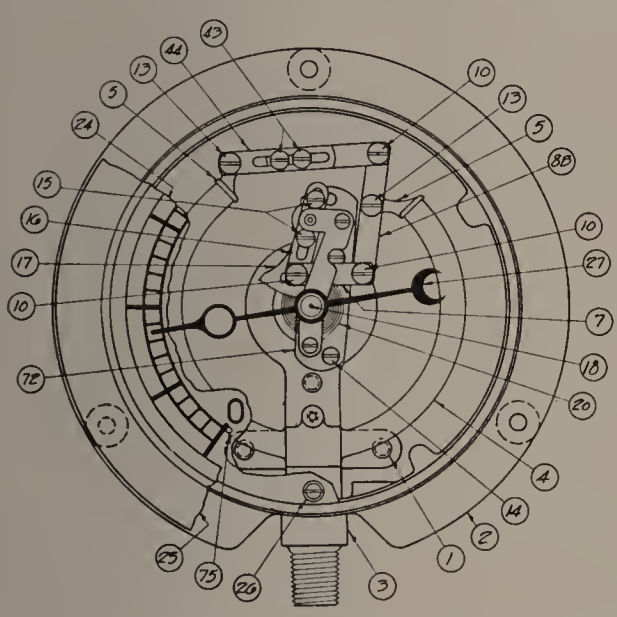
New Style
with Socket Extension
supporting
Movement and Dial

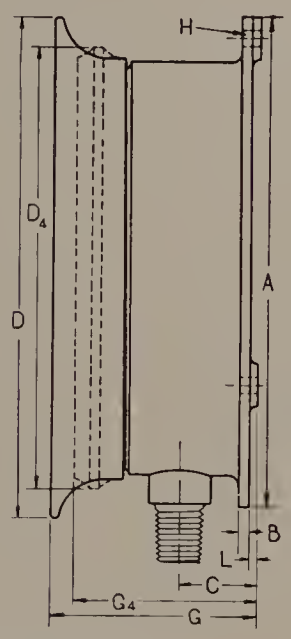
Interior View
Double Spring Gage

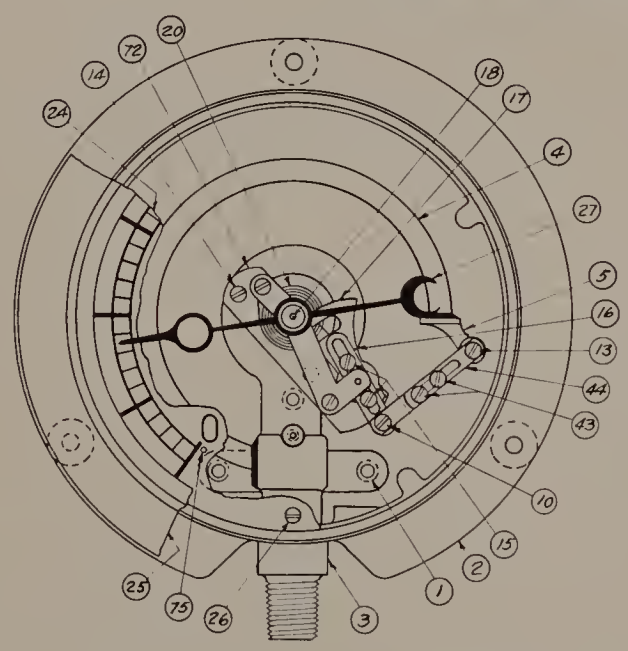
52-13 With OG Face Ring
52-23 With Flush Face Ring

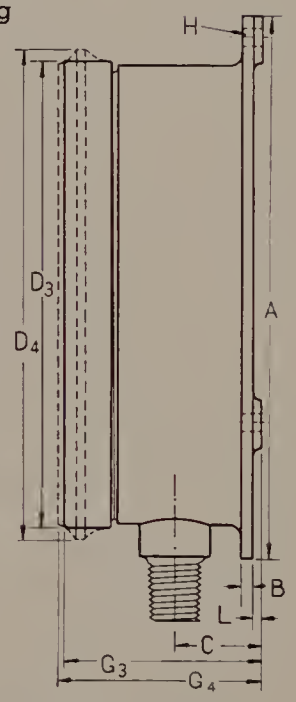
Interior View
Single Spring Gage

51-20 51-23
With Flush Face Ring









Part List No. 52-13 and 52-23

Part No.	Name of Part	List Prices:	4½″	5″
1	Socket Screw. Specify brass or iron	Iron ..	$0.08	$0.08
		Brass	.10	.10
2	Case. Specify brass or iron	Iron	1.50	2.00
		Brass	4.00	4.50
*3	Socket, 4 Spring, 5 Tip		2.00	2.50
7	Movement Connection Arm		.10	.10
8B	Lever		.20	.20
10	Connection Screw		.10	.10
13	Tip Connection Screw		.10	.10
14	Movement Screw		.10	.10
15	Adjusting Slide Lock Screw		.08	.08
16	Adjusting Slide		.10	.10
17	Sector		.60	.60
18	Pinion		.40	.40
20	Hair Spring		.20	.20
24	Dial. Specify pressure and finish		2.00	2.30
25	Ring		2.50	2.75
26	Dial Screw		.05	.05
27	Hand. Specify color		.15	.20
34	Glass. Not shown		.15	.15
43	Adjustment Screw		.10	.10
44	Adjustable Link, complete		.45	.45
72	Movement complete. Note below		1.50	1.50
75	Hand Stop Pin		.05	.05
	Approximate Weights: Iron and Brass. Lbs.		4	4½

** Specify pressure, not furnished separately.* *† Solid link in 3½ inch size.*

Dimensions	52-13					52-23				
Size	A	B	C	D	G	A	B	C	D_4	G_4
3½″										
4½″	5⅞″	⅛″	2 9/32″	5 13/16″	2 13/32″	5⅞″	⅛″	2 9/32″	5⅛″	2 1/16″
5″	6 7/16″	⅛″	2 9/32″	6 5/16″	2 13/32″	6 7/16″	⅛″	2 9/32″	5 9/16″	2 5/32″

Length = 1/16″ for 3½″ size and 3/32″ for 4½″ and 5″ size.

Part List No. 51-20 and 51-23

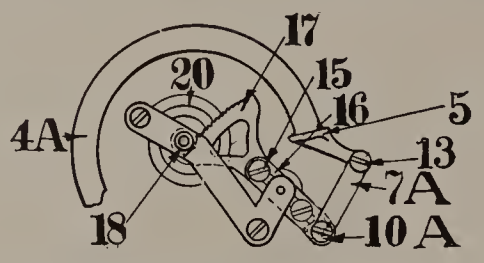
Part No.	Name of Part	List Prices:	3½″	4½″	5″
1	Socket Screw ..... Specify brass or iron	Iron	$0.08	$0.08	$0.08
		Brass	.10	.10	.10
2	Case. Specify brass or iron .	Iron	1.50	1.50	2.00
		Brass	4.00	4.00	4.50
*3	Socket, 4 Spring, 5 Tip		1.50	1.60	1.75
10	Connection Screw		.10	.10	.10
13	Tip Connection Screw		.10	.10	.10
14	Movement Screw		.10	.10	.10
15	Adjusting Slide Lock Screw		.08	.08	.08
16	Adjusting Slide		.10	.10	.10
17	Sector		.60	.60	.60
18	Pinion		.40	.40	.40
20	Hair Spring		.20	.20	.20
24	Dial. Specify pressure and finish		2.00	2.00	2.30
25	Ring		2.50	2.50	2.75
26	Dial Screw		.05	.05	.05
27	Hand. Specify color		.15	.15	.20
34	Glass. Not shown		.15	.15	.15
43	Adjustment Screw			.10	.10
44	Adjustable Link complete		†.15	.45	.45
72	Movement complete. Note below		1.50	1.50	1.50
75	Hand Stop Pin		.05	.05	.05
	Approximate Weights: Iron and Brass. Lbs.		2	3½	4

We recommend ordering Movements complete.

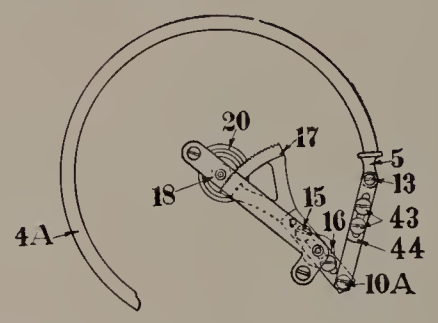
Dimensions	51-20					51-23				
Size	A	B	C	D_3	G_3	A	B	C	D_4	G_4
3½″	4 5/8″	3/32″	2 3/32″	3 29/32″	1 9/16″					
4½″	5⅞″	⅛″	2 9/32″	4⅞″	2 1/16″					
5″	6 7/16″	⅛″	2 9/32″	5 11/32″	1 31/32″	6 7/16″	⅛″	13/16″	5 9/16″	2 5/32″

Height = 3/16″ for all sizes.

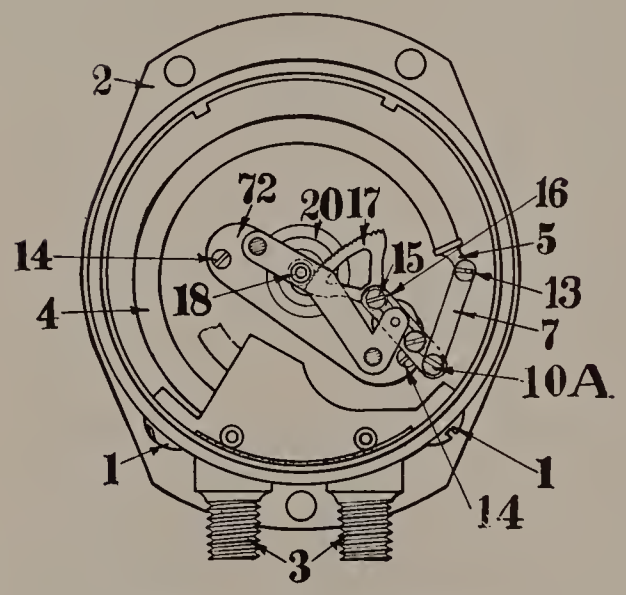
Locomotive Duplex Air Brake and Stoker Gages



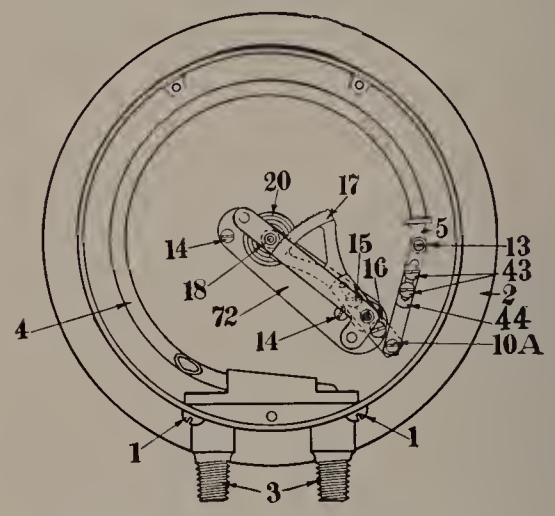
Inner or Brake Pipe Spring and Connections



Upper Spring and Connections



Outer or Cylinder Spring and Connections



Lower Spring and Connections

62 C 3½-inch Duplex Air Brake Gage

62 BZ
62 BAB-1
62 BAB-2
62 BAC
62 B-1&2
62 BU
} 5-inch

REFERENCE LIST OF PARTS

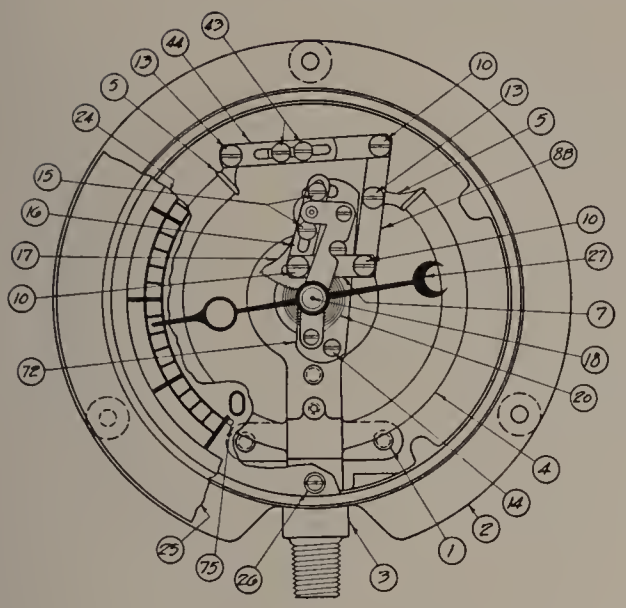
Fig.	Name of Part	Style: 62 C Duplex / Size: 3½″	62 B-1&2 62 BU 62 BZ / 5″	BAB-1 BAB-2 BAC / 5″
		List Prices		
1	Socket Screw ..... Iron	$0.08	$0.08	$0.08
	Brass	.10	.10	.10
2	Case ..... Iron	1.50	2.00	2.00
	Brass	4.00	4.50	4.50
3 4 5	Socket Spring Tip — Complete. Not furnished separately Note below	3.00	3.25	3.25
3 4A 5	Socket Spring Tip — Complete. Not furnished separately Note below	3.00	3.25	3.25
7	Movement Connection Arm	.10‡	....	....
10A	Movement Arm Con. Screw	.10	.10	.10
13	Tip Connection Screw	.10	.10	.10
14	Movement Case Screw	.10	.10	.10
15	Adjusting Slide Lock Screw	.08	.08	.08

Fig.	Name of Part	Style: 62 C Duplex / Size: 3½″	62 B-1&2 62 BU 62 BZ / 5″	BAB-1 BAB-2 BAC / 5″
		List Prices		
16	Adjusting Slide	$0.10	$0.10	$0.10
17	Sector	.60§	.60§	.60§
18	Pinion, Nickel Silver	.40	.40	.40
20	Hair Spring. Note below	.20	.20	.20
24	Dial, Silvered or Black.* ..... Note below, not shown	2.50	3.00	3.70
25	Ring, Flush or OG, Threaded .. Not shown	2.50	2.75	2.75
26	Dial Screw. Not shown	.05	.05	.05
27	Hand, Black or Red ..... Note below. Not shown	.15	.20	.20
34	Glass. Not shown	.15	.15	.15
43	Adjustable Link Screw	....	.10	.10
44	Adjustable Link, complete	....†	.45	.45
75	Hand Stop Pin. Not shown.....	.05	.05	.05
72	Movement complete. Note below	3.00	3.00	3.00

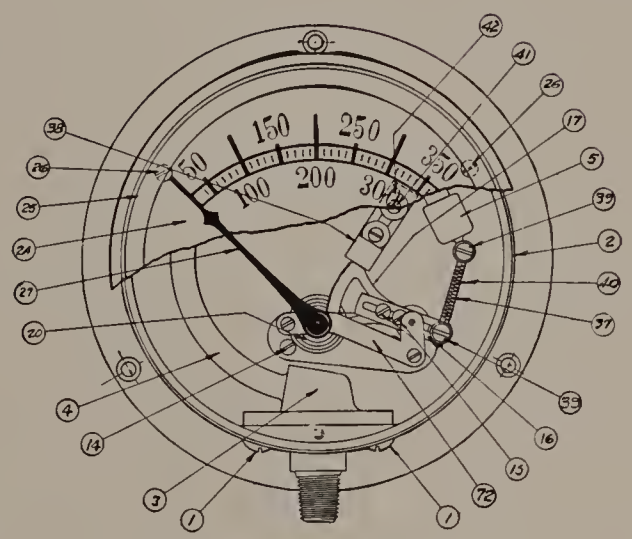
* Quadruple dials with other than standard service marking or pressure, $1.00 each, net, extra.
† Solid link (7) in 3½-inch. ‡ Specify 7 or 7A. § Specify upper or lower.

In ordering Parts always specify number of Gage; maximum dial graduation and finish, silvered, black or white enameled; iron or brass case, hairspring, top or bottom style; hand, red or black; dial service marking desired. It is more economical to order complete new Movements than their component parts for reassembling.

Locomotive Booster Steam and Feed Water Heater Gages



52 BB-13 5-inch Dial
Booster Gage



51 E 5-inch "Worthington"
51 S 6-inch "Elesco"

REFERENCE LIST OF PARTS

Fig.	Name of Part	List Prices
	Size	5"
1	Socket Screw, Iron	$0.08
1	Socket Screw, Brass	.10
2	Case, Iron	2.00
2	Case, Brass	4.50
3, 4, 5	Socket, Spring, Tip — Complete. Not furnished separately	2.50
7	Movement Connection Arm	.10
8B	Lever	.20
10	Connection Screw	.10
13	Tip Connection Screw	.10
14	Movement Case Screw	.10
15	Adjusting Slide Lock Screw	.08
16	Adjusting Slide	.10
17	Sector	.60
18	Pinion	.40
20	Hair Spring	.20
24	Dial, Silvered or Black. Not shown	2.30
25	Ring, OG or Flush, Threaded. Not shown	2.75
26	Dial Screw. Not shown	.05
27	Hand, Black or White	.20
34	Glass. Not shown	.15
43	Adjustable Link Screw	.10
44	Adjustable Link, complete	.45
72	*Movement, complete. Note below	1.50
75	Hand Stop Pin. Not shown	.05

Fig.	Name of Part		5"	6"
	Size			
			List Prices	
1	Socket Screw	Iron	$0.08	$0.08
1	Socket Screw	Brass	.10	.10
2	Case	Iron	3.75	4.75
2	Case	Brass	4.25	5.50
3, 4, 5	†Socket, Spring, Tip — Not furnished separately		2.50	2.80
14	Movement Case Screw		.10	.10
15	Adjusting Slide Lock Screw		.08	.08
16	Adjusting Slide		.10	.10
17	Sector		.60	.60
18	Pinion. Not shown		.40	.40
20	Hair Spring		.20	.20
24	†Dial		2.30	‡2.80
25	Ring or Cover		2.75	3.50
26	Dial Screw		.05	.05
27	Hand		.20	.20
34	Glass. Not shown		.15	.20
37	Tension Spring		.60	.60
38	Spring Stop Post		.40	.40
39	Connection Arm Screw		.20	.20
40	Connection Arm		.40	.40
41	Spring Stop Post Screw		.10	.10
42	Spring Stop Post Washer		.05	.05
72	*Movement, complete		1.50	1.80
72	Movement, Hard Chrome Plated		2.50	2.80

* It is more economical to order complete new Movements than their component parts for reassembling.
† When ordering Springs (3, 4, and 5), or Dials (24) specify the maximum pressure.
‡ White porcelain or black.

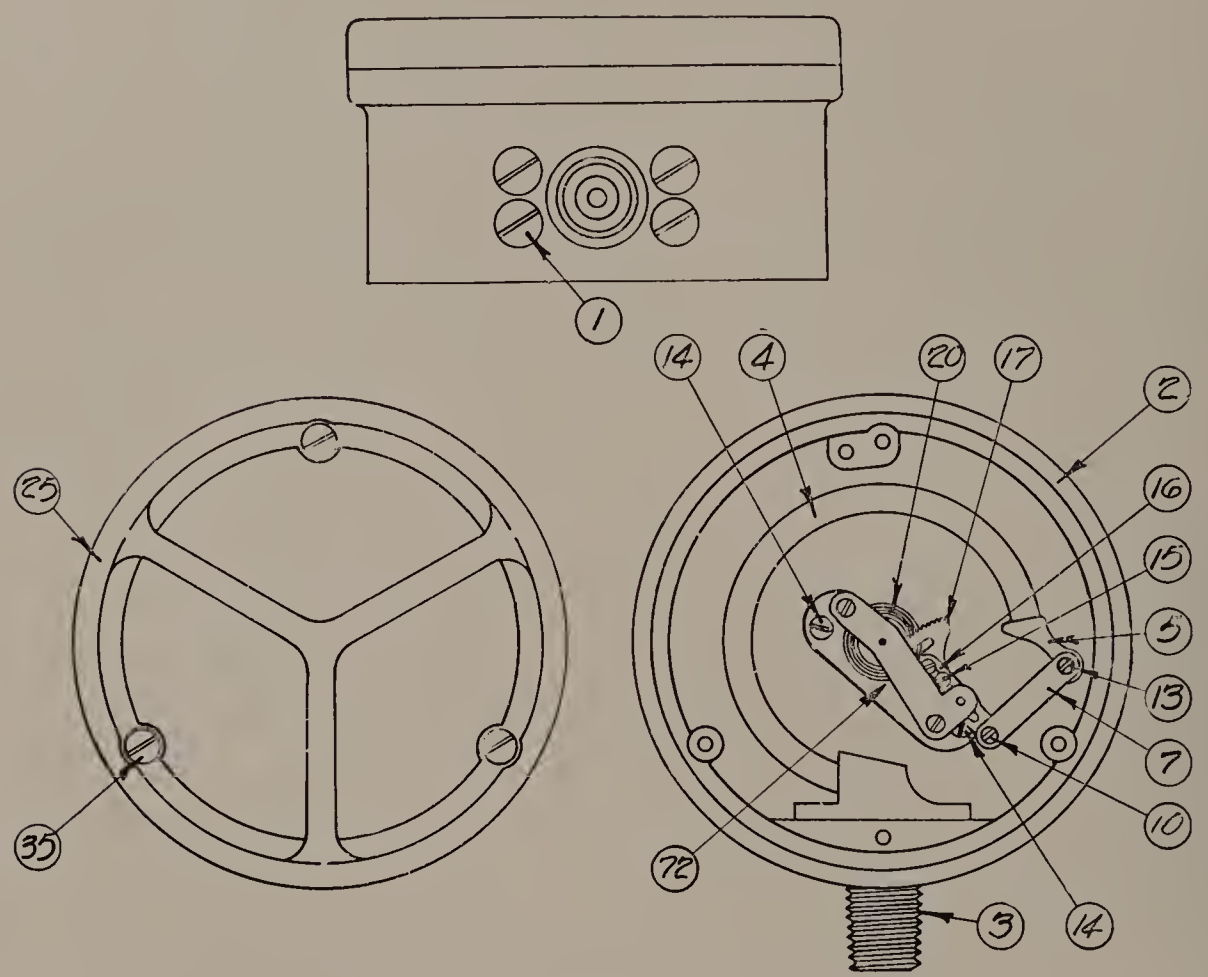
In ordering Parts specify style, number of Gage, size, style of case, finish of dial and maximum graduation.

The Nos. 51 E and 51 S Gages are extensively used on locomotive feed water heaters and are especially adapted to this severe service. We strongly recommend the use of Retard Device No. 120 and hard chrome plated Movements with these Gages.

For weights and dimensions see page 28.

Protected Dial Pressure Gage

3-Inch Dial Aluminum Case



PRICE LIST OF PARTS

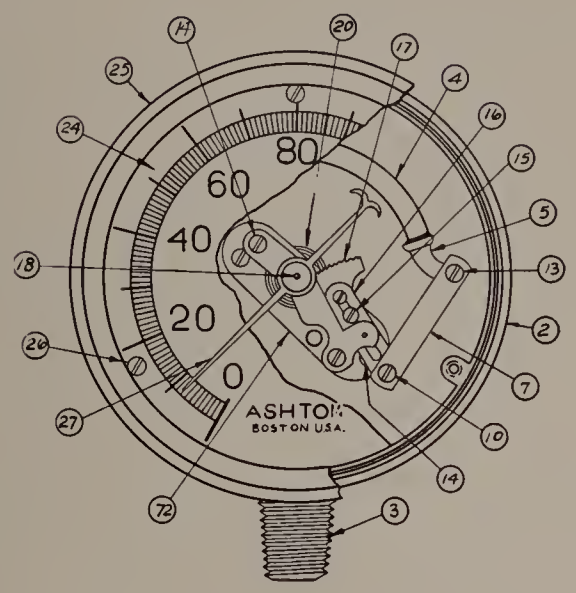
1. Socket Screw	$0.10	13. Tip Connection Screw	$0.10	25. Ring	$1.00
2. Case	3.00	14. Movement Case Screw	.10	26. Dial Screw (not shown)	.05
3. Socket (¼-inch pipe not furnished separately)	3.00	15. Adjusting Slide Lock Screw	.08	27. Hand (not shown)	.15
4. Spring (¼-inch pipe not furnished separately)		16. Adjusting Slide	.10	34. Celluloid (not shown)	.25
5. Tip (¼-inch pipe not furnished separately)		17. Sector	.60	35. Ring Screw	.05
7. Movement Connection Arm	.10	18. Pinion	.40	72. Movement, complete	1.00
10. Connection Screw	.10	20. Hair Spring	.20	75. Hand Stop Pin (not shown)	.05
		24. Dial (not shown)	1.50		

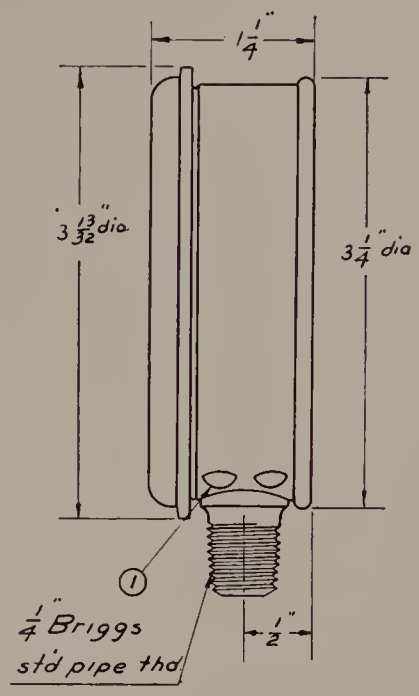
The No. 59 C Gage is for air brake service on rear end train brake cock, and enables the man backing a train to know the pressure on the brake system.

In ordering Parts specify style number of Gage. Weight and dimensions on page 28.

We recommend ordering Movements complete.

Inspectors' Pocket Test Gage





REFERENCE LIST OF PARTS

Part List for 3″ No. 51 AH and No. 159-1

Part No.	Name of Part	List Prices 51 AH	159-1
1	Socket Screw, Nickel Plated	$0.10	$0.10
2	Case. Brass Nickel Plated	2.25	2.25
3	Socket		
4	Spring } Specify pressure { Not furnished separately. }	1.50	2.50
5	Tip		
7	Movement Connection Arm	.10	.10
10	Movement Connection Arm Screw	.10	.10
13	Tip Connection Screw	.10	.10
14	Movement Case Screw	.10	.10
15	Adjusting Slide Lock Screw	.08	.08
16	Adjusting Slide	.10	.10
17	Sector	.60	.60
18	Pinion	.40	.40
20	Hair Spring	.20	.20
24	Dial	1.50	3.00
25	Ring	2.50	2.50
26	Dial Screw	.05	.05
27	Hand	.15	.15
34	Glass. Not shown	.35	.35
72	Movement complete	1.00	1.00
107	Cover. Not shown	1.00	1.00

We recommend ordering Movement complete.

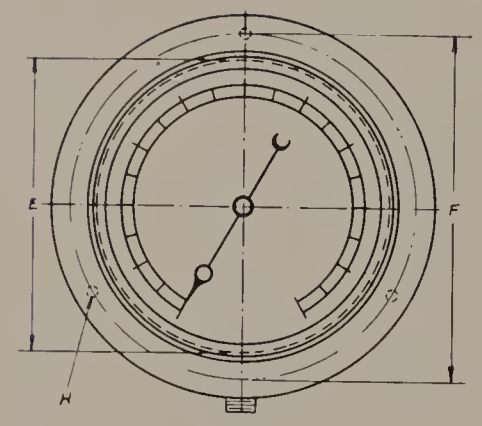
Weight 1¼ Lbs.

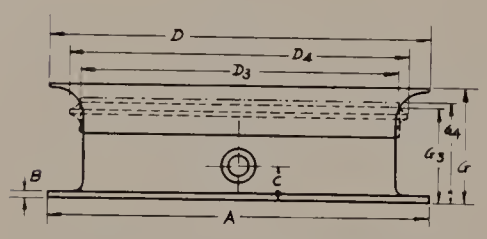
ASHTON

Locomotive Steam and Air Gages

DIMENSION SHEET AND WEIGHTS

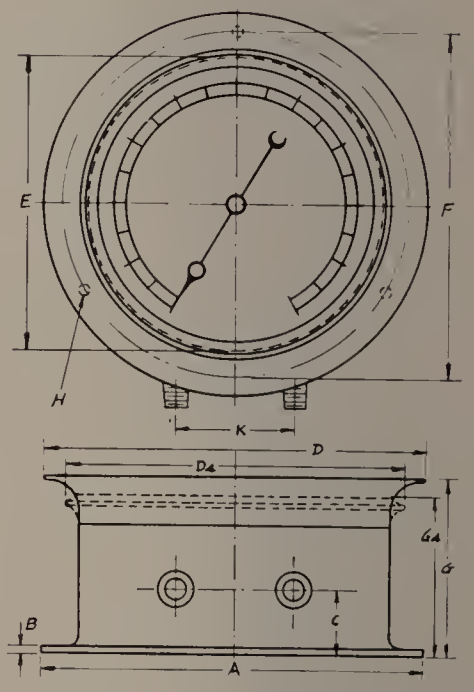
51 E 51 S



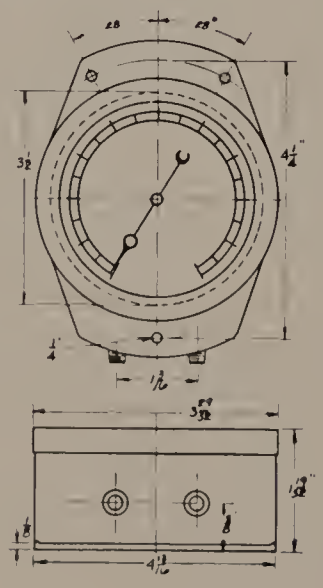


		BRASS CASE		IRON CASE	
Size:		5″	6″	5″	6″
Diameter of Back Flange	"A"	$6\frac{5}{16}$	$7\frac{5}{8}$	$6\frac{3}{8}$	$7\frac{5}{8}$
Thickness of Flange	"B"	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Location of Bottom Connection	"C"	$\frac{13}{16}$	$\frac{27}{32}$	$\frac{13}{16}$	$\frac{27}{32}$
Diameter of Ring (OG)	"D"	$6\frac{5}{16}$	$7\frac{3}{8}$	$6\frac{3}{16}$	$7\frac{1}{8}$
Diameter of Ring (Flush)	"D_3"	$5\frac{15}{32}$	$6\frac{1}{2}$	$5\frac{15}{32}$	$6\frac{1}{2}$
Diameter of Ring (Semi-Flush)	"D_4"	$5\frac{9}{16}$	$7\frac{3}{32}$	$5\frac{9}{16}$	$7\frac{3}{32}$
Diameter of Dial	"E"	5	6	5	6
Diameter of Bolt Circle	"F"	$5\frac{7}{8}$	7	$5\frac{7}{8}$	7
Height of Gage (OG)	"G"	$2\frac{5}{16}$	$2\frac{7}{16}$	$2\frac{5}{16}$	$2\frac{7}{16}$
Height of Gage (Flush)	"G_3"	$1\frac{31}{32}$	$2\frac{3}{32}$	$1\frac{31}{32}$	$2\frac{3}{32}$
Height of Gage (Semi-Flush)	"G_4"	$2\frac{1}{16}$	$2\frac{5}{16}$	$2\frac{1}{16}$	$2\frac{5}{16}$
Size of Holes	"H"	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{3}{16}$
Approximate Weight	"lbs."	$3\frac{3}{4}$	$6\frac{1}{2}$	$3\frac{3}{4}$	$6\frac{1}{2}$

62 B-1 62 B-2 62 BAC 62 BR 62 BPA
62 BAA 62 BO 62 BA 62 BU 62 BZ 62 BAB-1 62 BAB-2



		BRASS and IRON CASES		
Size:		5″	6″	$6\frac{3}{4}$″
Diameter of Back Flange	"A"	$6\frac{3}{8}$	$7\frac{5}{8}$	$8\frac{1}{2}$
Thickness of Flange	"B"	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Location of Bottom Connection	"C"	$1\frac{3}{32}$	$1\frac{3}{16}$	$1\frac{11}{32}$
Diameter of Ring (OG)	"D"	$6\frac{5}{16}$	$7\frac{3}{8}$	$8\frac{1}{4}$
Diameter of Ring (Semi-Flush)	"D_4"	$5\frac{9}{16}$	$7\frac{3}{32}$	$7\frac{13}{16}$
Diameter of Dial	"E"	5	6	$6\frac{3}{4}$
Diameter of Bolt Circle	"F"	$4\frac{7}{8}$	7	$7\frac{3}{4}$
Height of Gage (OG)	"G"	$3\frac{3}{32}$	$3\frac{3}{16}$	$3\frac{11}{32}$
Height of Gage (Semi-Flush)	"G_4"	$2\frac{27}{32}$	$3\frac{1}{16}$	$3\frac{1}{16}$
Size of Holes	"H"	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
Distance Between Sockets	"K"	$1\frac{11}{16}$	$1\frac{11}{16}$	$1\frac{11}{16}$
Approximate Weight	"lbs."	$5\frac{1}{4}$	8	9



$3\frac{1}{2}$″ 62 C
Weight $2\frac{1}{4}$ lbs.

For dimensions of 52-13, 52-23, 51-20, 51-23, 52 BB-13 see page 23.

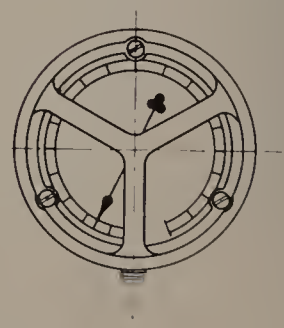
For dimensions of 159-1, 51 AH see page 27.

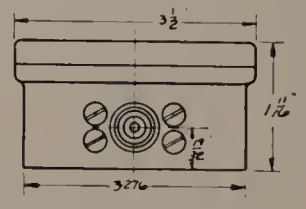
For dimensions of 52 LBC, 52 LBCI-3 see page 18

For dimensions of 52 DI-3, 62QI-7 see page 17

For dimensions of 72 I-3 see page 20

For dimensions of 52 DI-5 see page 19.





3″ 59 C
Weight $\frac{3}{4}$ lb.

OTHER ASHTON PRODUCTS

PRESSURE GAGES
VACUUM GAGES
MASTER PILOT AND MASTER PRESSURE GAGES
RECORDING GAGES
WHEEL PRESS RECORDING GAGE
LOCOMOTIVE DRIVING WHEEL QUARTERING GAGE
LOCOMOTIVE OPEN POP AND MUFFLED SAFETY VALVES
GAGE TEST PUMPS
GAGE COCKS
GAGE CHECK VALVES
POP SAFETY VALVES, SINGLE
POP SAFETY VALVES, DUPLEX
POP SAFETY VALVE YOKES
POP SAFETY VALVE MUFFLERS
RELIEF VALVES

MADE IN MANY SIZES AND STYLES FOR LOCOMOTIVE, STATIONARY, AND MARINE BOILERS, ALSO FOR POWER HOUSES AND SHOP EQUIPMENT

ASHTON QUALITY

ASHTON

Cable Address, "ASHTON," BOSTON

Telegraph or Cable Code

Also use Western Union, ABC or Bentley's Code as necessary

Code	
MABET	At what price and how soon can you furnish?
MABIX	Ship all you possibly can by quickest route.
MABOD	Ship all by cheapest route.
MACAP	Ship by fast freight.
MACKA	Ship by express.
MACOE	Ship by parcel post.
MADAR	Ship by parcel post special delivery.
MADEV	Hold shipment order No. ——; particulars by mail.
MADIZ	Advise regarding shipment order No. ——.
MADOF	Trace shipment order No. ——.
MADUK	Iron Case Brass Ring
MAFAT	Iron Case Nickel Plated Ring

Code	
MAFEX	Iron Case Chrome Plated Ring
MAFLE	Brass Case and Ring
MAFOH	Brass Case and Ring Nickel Plated
MAFUM	Brass Case and Ring Chrome Plated
MAGEY	Black Dial
MAGUN	Silvered Dial
MAHAV	White Enamel Dial
MAHEX	Name on Dial
MAJAX	Illuminated Dial
MAJEB	Non-Illuminated Dial

Sizes in Inches

Code		Code		Code		Code	
MAJOL	1/8"	MAKOM	3½"	MALUT	6¾"	MANOP	18"
MAJUR	¼"	MAKRO	4½"	MANAB	8½"	MANZA	24"
MAKAY	½"	MALAZ	5"	MANEF	10"	MAPAD	30"
MAKEC	2½"	MALON	6"	MANIJ	12"	MAPEH	40"
MAKIG	3"						

Pressure in Pounds

Code		Code		Code		Code		Code	
LABAP	5	LAFIC	70	LAKAZ	135	LASSY	200	LAXAL	1000
LACAR	10	LAGEZ	75	LAKBA	140	LASYE	225	LAXDO	1200
LACEV	15	LAGID	80	LAKFE	145	LATEL	250	LAXEP	1500
LACIZ	20	LAHAW	85	LAKON	150	LATHO	300	LAXUF	2000
LACOF	25	LAHOK	90	LARAF	155	LATIP	350	LAYAM	2500
LACUK	30	LAHTO	95	LARDI	160	LATUB	400	LAYCO	3000
LACYO	35	LAHUP	100	LAREJ	165	LAVEN	450	LAYOB	3500
LADAS	40	LAJAY	105	LARIN	170	LAVIS	500	LAZAN	4000
LADEW	45	LAJEC	110	LARJO	175	LAVOY	550	LAZES	5000
LADME	50	LAJIG	115	LARTY	180	LAVUD	600	LAZOC	10000
LADOG	55	LAJOM	120	LARUZ	185	LAWAK	700	LEBEY	15000
LADUL	60	LAJRO	125	LASEK	190	LAWIT	800	LEBUN	20000
LAFEY	65	LAJUS	130	LASNU	195	LAWOZ	900	LECEZ	25000

Printed in U.S.A.

C-8023

THE MURRAY PRINTING COMPANY
CAMBRIDGE, MASS.